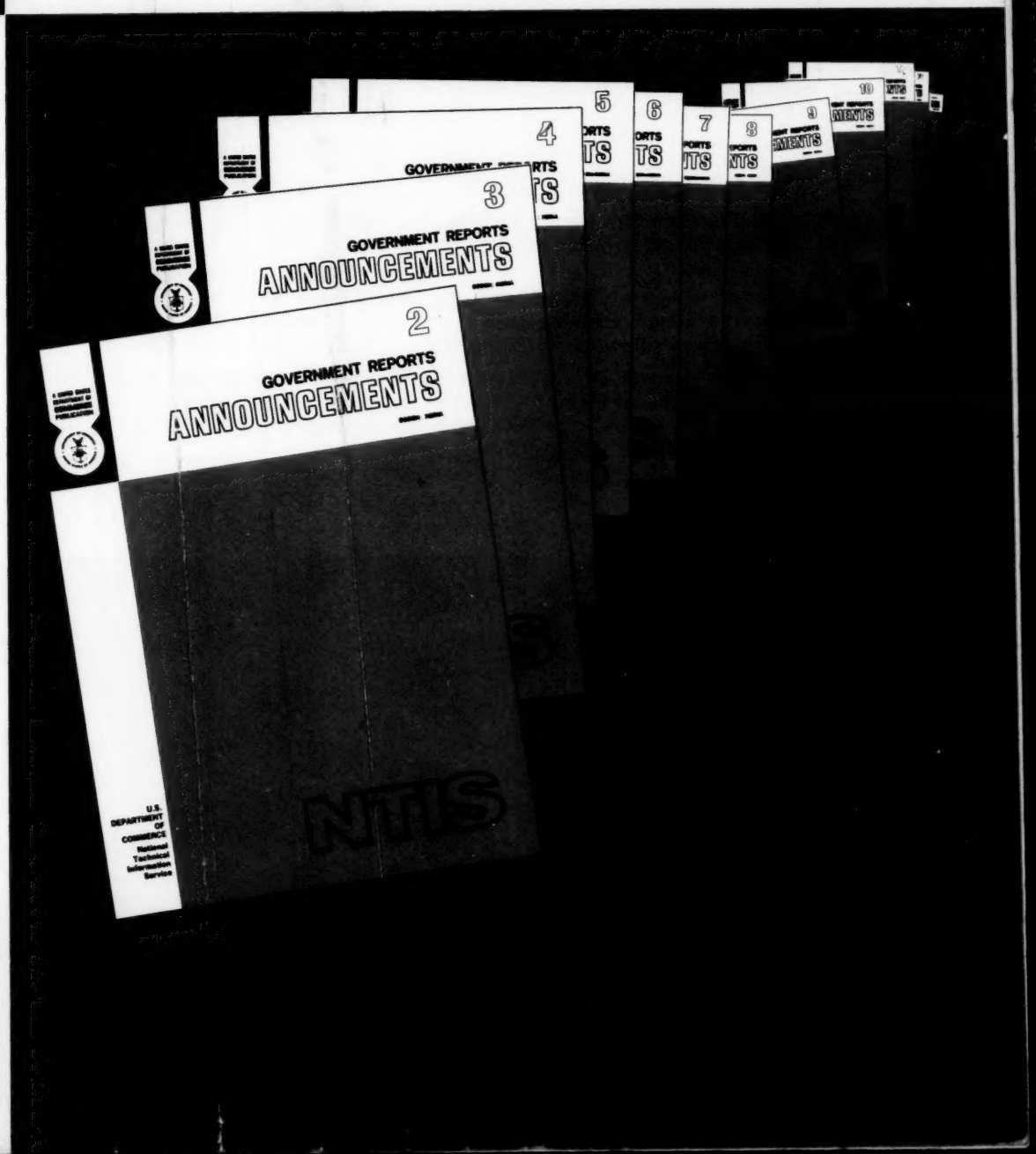
A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

December 10, 1973 23

GOVERNMENT REPORTS ANNOUNCEMENTS

CODEN: GVRAA



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GOVERNMENT REPORTS ANNOUNCEMENTS

Volume 73, Number 23 ◆◆◆ December 10, 1973

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SUBJECT FIELD AND GROUP STRUCTURE

(Use Edge Index on back cover to locate subject field in the Journal)

FIELD 1. AERONAUTICS. Includes the following Groups: Aerodynamics; Aeronautics; Aircraft; Aircraft Flight Control and Instrumentation; Air Facilities.

FIELD 2. AGRICULTURE. Includes the following Groups: Agricultural Chemistry; Agricultural Economics; Agricultural Engineering; Agronomy and Horticulture; Animal Husbandry; Forestry.

FIELD 3. ASTRONOMY AND ASTROPHYSICS. Includes the following Groups: Astronomy; Astrophysics; Celestial Mechanics.

FIELD 4. ATMOSPHERIC SCIENCES. Includes the following Groups: Atmospheric Physics; Meteorology.

FIELD 5. BEHAVIORAL AND SOCIAL SCIENCES. Includes the following Groups: Administration and Management; Documentation and Information Technology; Economics; History, Law, and Political Science; Human Factors Engineering; Humanities; Linguistics; Man-machine Relations; Personnel Selection, Training, and Evaluation; Psychology (Individual and Group Behavior); Sociology.

FIELD 6. BIOLOGICAL AND MEDICAL SCIENCES. Includes the following Groups: Biochemistry; Bioengineering; Biology; Bionics; Clinical Medicine; Environmental Biology; Escape, Rescue, and Survival; Food, Hygiene and Sanitation; Industrial (Occupational) Medicine; Life Support; Medical and Hospital Equipment; Microbiology; Personnel Selection and Maintenance (Medical); Pharmacology; Physiology; Protective Equipment; Radiobiology; Stress Physiology; Toxicology; Weapon Effects.

FIELD 7. CHEMISTRY. Includes the following Groups: Chemical Engineering; Inorganic Chemistry; Organic Chemistry; Physical Chemistry, Radio and Radiation Chemistry.

FIELD 8. EARTH SCIENCES AND OCEANOGRAPHY. Includes the following Groups: Biological Oceanography; Cartography; Dynamic Oceanography; Geochemistry; Geodesy; Geography; Geology and Mineralogy; Hydrology and Limnology; Mining Engineering; Physical Oceanography; Seismology; Snow, Ice, and Permafrost; Soil Mechanics; Terrestrial Magnetism.

FIELD 9. ELECTRONICS AND ELECTRICAL ENGINEERING. Includes the following Groups: Components; Computers; Electronic and Electrical Engineering; Information Theory; Subsystems; and Telemetry.

FIELD 10. ENERGY CONVERSION (Non-propulsive). Includes the following Groups: Conversion Techniques; Power Sources; Energy Storage.

FIELD 11. MATERIALS. Includes the following Groups: Adhesives and Seals; Ceramics, Refractories, and Glasses; Coatings, Colorants, and Finishes; Composite Materials; Fibers and Textiles; Metallurgy and Metallography; Miscellaneous Materials; Oils, Lubricants, and Hydraulic Fluids; Plastics; Rubbers; Solvents, Cleaners, and Abrasives; Wood and Paper Products.

FIELD 12. MATHEMATICAL SCIENCES. Includes the following Groups: Mathematics and Statistics; Operations Research.

FIELD 13. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING. Includes the following Groups: Air Conditioning, Heating, Lighting, and Ventilating; Civil Engineering; Construction Equipment, Materials, and Supplies; Containers and Packaging; Couplings, Fittings, Fasteners, and Joints; Ground Transportation Equipment; Hydraulic and Pneumatic Equipment; Industrial Processes; Machinery and Tools; Marine Engineering; Pumps, Filters, Pipes, Fittings, Tubing, and Valves; Safety Engineering; Structural Engineering.

FIELD 14. METHODS AND EQUIPMENT. Includes the following Groups: Cost Effectiveness; Laboratories, Test Facilities, and Test Equipment; Recording Devices; Reliability; Reprography.

FIELD 15. MILITARY SCIENCES. Includes the following Groups: Antisubmarine Warfare; Chemical, Biological, and Radiological Warfare; Defense; Intelligence; Logistics; Nuclear Warfare; Operations, Strategy, and Tactics.

FIELD 16. MISSILE TECHNOLOGY. Includes the following Groups: Missile Launching and Ground Support; Missile Trajectories; Missile Warheads and Fuses; Missiles.

FIELD 17. NAVIGATION, COMMUNICATIONS, DETECTION, AND COUNTERMEASURES. Includes the following Groups: Acoustic Detection; Communications; Direction Finding; Electromagnetic and Acoustic Countermeasures; Infrared and Ultraviolet Detection; Magnetic Detection; Navigation and Guidance; Optical Detection; Radar Detection; Seismic Detection.

FIELD 18. NUCLEAR SCIENCE AND TECHNOLOGY. Includes the following Groups: Fusion Devices (Thermonuclear); Isotopes; Nuclear Explosions; Nuclear Instrumentation; Nuclear Power Plants; Radiation Shielding and Protection; Radioactive Wastes and Fission Products; Radioactivity; Reactor Engineering and Operation; Reactor Materials; Reactor Physics; Reactors (Power); Reactors (Non-power); SNAP Technology.

FIELD 19. ORDNANCE. Includes the following Groups: Ammunition, Explosives, and Pyrotechnics; Bombs; Combat Vehicles; Explosions, Ballistics, and Armor; Fire Control and Bombing Systems; Guns; Rockets; Underwater Ordnance.

FIELD 20. PHYSICS. Includes the following Groups: Acoustics; Crystallography; Electricity and Magnetism; Fluid Mechanics; Masers and Lasers; Optics; Particle Accelerators; Particle Physics; Plasma Physics; Quantum Theory, Solid Mechanics; Solid-state Physics; Thermodynamics; Wave Propagation.

FIELD 21. PROPULSION AND FUELS. Includes the following Groups: Air-breathing Engines; Combustion and Ignition; Electric Propulsion; Fuels; Jet and Gas Turbine Engines; Nuclear Propulsion; Reciprocating Engines; Rocket Motors and Engines; Rocket Propellants.

FIELD 22. SPACE TECHNOLOGY. Includes the following Groups: Astronautics; Spacecraft; Spacecraft Trajectories and Reentry; Spacecraft Launch Vehicles and Ground Support.

REPORTS & TRANSLATIONS

1. AERONAUTICS

N73-28976/1GA PC$21.75/MF$1.45
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.Dept. of Solid Mechanics, Structures, and Mechanical Design.
STUDIES IN TILT-ROTOR VTOL AIRCRAFT AEROELASTICITY, VOLUME 1.
Ph.D. Thesis - Case Western Reserve Univ.
R. G. Kvaternik. Jun 73, 394p NASA-TM-X-69497

Descriptors: *Aerodynamic characteristics, *Aeroelasticity, *Aircraft stability, *Tilting rotors, *V/stol aircraft, Aerodynamic forces, Flutter analysis, Wind tunnel tests.

For abstract, see STAR 1120

N73-28977/9GA PC$16.00/MF$1.45
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.Dept. of Solid Mechanics, Structures, and Mechanical Design.
STUDIES IN TILT ROTOR VTOL AIRCRAFT AEROELASTICITY, VOLUME 2.
Ph.D. Thesis - Case Western Reserve Univ.
R. G. Kvaternik. Jun 73, 278p NASA-TM-X-69496

Descriptors: *Aeroelasticity, *Structural analysis, *Structural vibration, *Tilting rotors, *V/stol aircraft, *Vibration effects, Aerodynamic configurations, Finite element method, Numerical analysis.

For abstract, see STAR 1120

1A. Aerodynamics

AD-767 712/3GA PC$3.75/MF$1.45
West Virginia Univ Morgantown Dept of Aerospace Engineering
EXPERIMENTAL INVESTIGATION OF AN EXTERNAL AERODYNAMIC DIFFUSER,
Richard E. Longhouse, and John L. Loth. Apr 71, 96p Rept no. TR-29
Contract N00014-68-A-0512

Descriptors: (*Exhaust diffusers, Design), (*Shrouded propellers, Exhaust diffusers), (*Short take-off planes, *Hovering), Flow fields, Boundary layer control systems, Flow separation, Aerodynamic slots, Nozzle gas flow, Numerical analysis, Captive tests.

Improvement in the thrust/power ratio for shrouded propellers and fan-in-wing units, which are widely used for V/STOL aircraft propulsion, can be achieved by using an external aerodynamic diffuser during hover. Large diffuser divergence angles are required which necessitate a technique of controlling the flow separation from the internal diffuser wall. The purpose of this experimental investigation was to obtain a correlation between experimental and analytical prediction of performance improvement in order to generate a design technique for optimization of external diffusion, and investigate the potential of several techniques which offer a method of forcing the flow to diffuse externally. A static test facility for measuring the external flow field and the thrust of the model was constructed. All tests were performed with uniform, axial flow at the diffuser inlet. Two-dimensional tests were conducted employing either turning vanes, coanda effect, or rotating cylinder walls. Axisymmetric tests were performed using boundary layer control by suction or blowing. (Modified author abstract)

1B. Aeronautics

AD-767 663/8GA PC$6.50/MF$1.45
Naval Postgraduate School Monterey Calif
THE DESIGN, FABRICATION AND EVALUATION OF THE AURAL ANGLE OF ATTACK/STALL WARNING SYSTEM.
Aeronautical engineer's thesis,
Penn Evans Mullowney, Jr. Jun 73, 89p

Descriptors: (*Angle of attack, Warning systems), (*Stall-warning indicators, *Auditory signals), Aviation safety, Aerial warfare, Take-off, Aircraft landings, Design, Instrumentation, Performance(Engineering), Human engineering, Simulation, Tracking, Flight testing, Effectiveness, Electronic equipment, Intensity, Theses.
Identifiers: Stall angles.

Maximum performance and stall avoidance can be realized in high-performance aircraft only if the pilot is fully aware of angle of attack. Because present methods of providing this information have proven to be inadequate, an alternative method has been proposed. The paper describes an electronic device providing angle of attack

AD-767 679/4GA PC$5.25/MF$1.45
Naval Postgraduate School Monterey Calif
THE SIMULATION AND ANALYSIS OF CARRIER LANDINGS USING A NONLINEAR PILOT MODEL.
Master's thesis,
Clark Albert Wilson. Jun 73, 61p

Descriptors: (*Pilots, Response), (*Carrier landings, Glide path systems), Optical equipment, Lenses, Approach, Performance(Human), Models(Simulations), Mathematical models, Theses.
Identifiers: FLOLS(Fresnel Lens Optical Landing Systems), Fresnel lens optical landing systems, Analog simulation.

The report investigated the interaction of the pilot and the Fresnel lens optical landing system (FLOLS) with the aircraft system dynamics of a carrier landing and attempted to determine whether or not the dynamics of the FLOLS contributed to a nosedown command by the pilot when approaching touchdown. With the assumption of a nonlinear pilot model, the entire system's equations of motion were programmed on an analog computer and time histories of approaches for various pilot gains were recorded and analyzed. Results obtained showed that the stability of the entire system near touchdown was very sensitive to gains which the pilot adopted. Also, because of the lag in the FLOLS dynamics, the pilot would, for some pilot gains, input a definite nosedown command to counteract a rising meatball on the FLOLS display. The typical result of such a command is a hard landing or ramp strike. (Author)

AD-767 691/9GA PC$5.75/MF$1.45
Naval Postgraduate School Monterey Calif
A MODIFIED DESIGN CONCEPT, UTILIZING DECK MOTION PREDICTION, FOR THE A-7E AUTOMATIC CARRIER LANDING SYSTEM.
Master's thesis,
Thomas Maxwell Judd. Jun 73, 74p

Descriptors: (*Carrier landings, *Flight control systems), Flight decks, Flight paths, Airplane models, Ship models, Mathematical models, Equations of motion, Computer programs, Theses, Attack bombers, Jet bombers.
Identifiers: AWCLS(All Weather Carrier Landing Systems), All weather carrier landing systems, A-7 aircraft, A-7E aircraft, Digital simulation.

The present concept of automatic carrier landings, Mode I operational capability, as employed in Navy carrier-based aircraft, was investigated. The aircraft chosen for study was the A-7E. The A-7E All Weather Carrier Landing System (AWCLS) and the carrier landing environment including burble effects and deck motion were simulated. Height of hook above ramp, touchdown point, and velocity of impact dispersions were determined. The current system was then modified, utilizing the concept of a SPN-42 Deck Motion Compensation Lead Computer which operates on the basis of known aircraft characteristics and predicted carrier heave motion. Simulation showed that automatic carrier landing performance as measured by number of ramp strikes, hard landings, and bolters could be improved. The modifications suggested require only a minimum of component additions to the AWCLS currently in use in the Navy. (Author)

AD-768 307/1GA PC$3.00/MF$1.45
Naval Aerospace Medical Research Lab Pensacola Fla
ORIENTATION-ERROR ACCIDENTS IN REGULAR ARMY UH-1 AIR CRAFT DURING FISCAL YEAR 1970: RELATIVE INCIDENCE AND COST,
Jorma I. Niven, W. Carroll Hixson, and Emil Spezia. 14 Sep 73, 36p Rept no. NAMRL-1192 USAARL-74-5

Descriptors: (*Aviation accidents, *Helicopters), (*Army, Aviation accidents), (*Vertigo, Aviation accidents), Proprioception, Aviation safety, Army aircraft, Costs, Pilots, Aviation injuries, Damage, Military medicine, Army research.
Identifiers: UH-1 aircraft, H-1 aircraft, *Orientation error accidents.

The report is the fourth in a series of reports dealing with pilot disorientation/vertigo accident problem is Regular Army UH-1 helicopter operations. Incidence and cost data presented for fiscal year 1970 include a total of 43 major and minor orientation-error. Accidents (17 of which were fatal), resulting in 66 fatalities, 67 nonfatal injuries, and a total UH-1 aircraft damage cost of $7.706,191. (Author)

JPRS-60114/GA PC$3.50/MF$1.45
Joint Publications Research Service, Arlington, Va.
ANALYSIS OF METEOROLOGICAL CONDITIONS FOR AVIATION,
K. G. Abramovich. 25 Sep 73, 68p
Trans. of Analiz Meteorologicheskikh Uslovii dlya Aviatsii (USSR) n95 63p 1972.

Descriptors: (*All weather aviation, *Meteorological data), Aircraft landing, Flight paths, Atmospheric disturbances, Clear air turbulence, Troposphere, Supersonic transports, USSR, Translations.

The report contains the results of studying weather phenomena which can limit aircraft landings (visibility in a radiation fog, height of the lower cloud boundary) and also flights along air lanes (turbulence in the troposphere and stratosphere, icing of the aircraft). A study is made of the effect of the spatial variability of the wind in the stratosphere on the accuracy of maintaining a flight trajectory by a supersonic transport at a given altitude. (Author)

PB-224 391/3GA PC$3.00/MF$1.45
National Transportation Safety Board, Washington, D.C. Bureau of Aviation Safety.
AIRCRAFT ACCIDENT REPORT. JUGOSLOVENSKI AEROTRANSPORT (JAT), BOEING 707-321, YU-AGA. JOHN F. KENNEDY INTERNATIONAL AIRPORT, JAMAICA, NEW YORK, AUGUST 13, 1972.
4 Apr 73, 33p File-A-0001 NTSB-AAR-73-7

Descriptors: (*Aviation accidents, *Accident investigations), Failure, Brakes(Motion arresters), Takeoff, Wheel brakes, Aircraft fires, Skid resistance, Injuries, Passenger aircraft.
Identifiers: Boeing 707 aircraft.

On August 13, 1972, at 0050 eastern daylight time, while aborting a takeoff from Runway 13R, John F. Kennedy International Airport, Jamaica, New

York, Jugoslovenski Aerotransport (JAT) Flight 3410 ran off the end of the runway. There were 175 passengers and a crew of 11 aboard the aircraft at the time of the accident; 15 passengers and a steward were injured during evacuation. During the takeoff, the right cockpit sliding window came open, and made a loud noise. The captain initiated action to reject the takeoff. The aircraft ran off the end of the runway, struck the blast fence, and came to a stop approximately 120 feet from the end of the paved surface and 80 feet to the right of the runway. The left wing and engines Nos. 1 and 2 were damaged by impact and the ensuing fire. The crew and passengers successfully evacuated the aircraft by means of the emergency slides. The National Transportation Safety Board determines that the probable cause of the accident was the unknown degraded capability of the heavily loaded aircraft's braking system.

1C. Aircraft

AD-767 711/5GA PC$3.00/MF$1.45
Army Natick Labs Mass Clothing and Personal Life Support Equipment Lab
ENGINEERING EVALUATION OF AGE LIFE EXTENSION, T-10 HARNESSES, RISERS AND T-10 TROOP CHEST RESERVE PARACHUTE CANOPIES. SUPPLEMENT I - 1964-65 YEAR CLASSES.
Technical rept.,
Michael E. Mahar, Vasant K. Devarakonda, and Richard D. Wells. Oct 73, 22p Rept no. C/PLSEL-112 USA-NLABS-TR-74-9-CE

Descriptors: (*Packs(Parachute), Reliability), (*Parachute jumping, Air drop operations), Wear resistance, Strength, Loading(Mechanics), Infantry.
Identifiers: Paratroopers.

An engineering evaluation of T-10 troop-type harnesses, risers, and chest reserve parachute assemblies of year classes (dates of manufacture) 1964 and 1965 was conducted by laboratory testing of component materials. The data obtained from limited samplings from Fort Bragg, No. Carolina, Alaska and the Panama Canal Zone indicated a generally serviceable condition for this equipment at nine and eight years of total age. Taken with more extensive data and with the technical background and criteria developed in the earlier basic report 72-59-CE, (DDC AD 742-668) of the same title, dated March 1972, it was concluded that the recently extended 13 year (risers and harnesses) and 12 year (canopy assemblies) limits are fully substantiated for these 1964-65 classes. Subject to later check testing, further extension of the age life limit may be found appropriate. (Author)

AD-767 786/7GA PC$3.50/MF$1.45
Illinois Univ Savoy Aviation Research Lab
THE DESIGN AND FLIGHT EVALUATION OF A PERFORMANCE CONTROL SYSTEM.
Master's thesis,
Craig Alan Bergman. Aug 73, 67p Rept no. ARL-73-16/AFOSR-73-10 AFOSR-TR-73-1696
Contract F44620-70-C-0105

Descriptors: (*Flight control systems, Flight testing), (*Aircraft, Flight control systems), Design, Automatic pilots, Gyro stabilizers, Turning flight, Pitch(motion), Roll, Electronic equipment, Calibration.
Identifiers: General aviation aircraft, VFR(Visual Flight Rules), Visual flight rules, Evaluation.

A performance control system, which provides direct pilot control of vertical speed and bank angle, has been designed and flight tested in a twin-engine, general aviation aircraft. Automatic coordination and lift compensation in turns are provided. The system is FAA-certified for normal category operations under VFR conditions, above 400 feet AGL, with a qualified safety pilot. The operating ranges are plus or minus 1500 fpm vertical speed and plus or minus 60 degrees of bank angle. The system is insensitive to airspeed and altitude changes. Vertical speed accuracy is within 100 fpm for changes of power setting and landing gear extension/retraction. During flap changes and turning maneuvers the vertical speed changes by as much as 550 fpm, but recovery to within 100 fpm is accomplished within 20 seconds. Bank angle holding accuracy is approximately three degrees for turns of standard rate or less. (Author)

AD-767 875/8GA PC$10.50/MF$1.45
Boeing Vertol Co Philadelphia Pa
TRANSMISSION THERMAL MAPPING (CH-47C FORWARD ROTOR TRANSMISSION).
Final rept.,
Rocco C. Tocci, A. J. Lemanski, and Nelson J. Ayoub. May 73, 169p Rept no. D210-10545-1 USAAMRDL-TR-73-24
Contract DAAJ02-72-C-0075
Errata sheet inserted.

Descriptors: (*Transmissions, Thermal analysis), (*Helicopter rotors, Thermal stresses), (*Antiaircraft gunnery, Helicopter rotors), Helicopters, Transmission gears, Lubrication, Thermal radiation, Oil coolers, Bearings, Mechanical drawings.
Identifiers: H-47 aircraft, CH-47C aircraft, Thermal mapping.

The report presents the results of tests conducted to obtain the thermal maps of a CH-47C helicopter forward rotor transmission. The tests were conducted at several torque levels and to several controlled oil-out target temperatures. Thermal growth between selected points on the transmission case was measured and analyzed. (Author)

AD-767 879/0GA PC$7.25/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
A PRELIMINARY DESIGN OF A REMOTELY-CONTROLLED GLIDER FOR A LONG-LINE OPERATION.
Master's thesis,
Elbridge Lee Snapp, III. Jun 73, 105p Rept no. GA/AE/71-1

Descriptors: (*Gliders, Design), (*Aerial reconnaissance, Towed bodies), Surveillance drones, Television cameras, Low-intensity illumination, Fuselages, Configuration, Aerodynamic characteristics, Theses.
Identifiers: Long line loiter systems.

Low-level, covert observation of a small area of ground may be obtained by an unmanned glider towed from a large aircraft and suspended in Long-Line-Loiter. This glider is equipped with a Visually-Coupled Control System operated through a Low-Light-Level Television camera. The flider has a gross weight of 442.5 lb of which 282.3 lb is payload. The vehicle features a high wing and a constant-chord airfoil with 30 ft span. Overall vehicle length is 17.7 ft. Wings-level stall speed is 35.8 knots. The glider exhibits static longitudinal, lateral, and directional stability. Attaching the tow cable to the top of the fuselage above the vehicle center of gravity allows the glider to be flown in high-speed trail or suspended in Long-Line-Loiter. (Author)

AD-767 887/3GA PC$3.25/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
OPTIMAL CAPABILITIES OF HYPERSONIC PASSENGER AIRCRAFT ON KEROSENE FUEL,
Ya. N. Gaukham. 12 Sep 73, 25p Rept no. FTD-HT-23-801-73
Edited trans. of Aerodinamika Sverkhzvukovykh Samoletov. Sbornik (USSR) n2(182) p14-30 1971, by Louise E. Heenan.

Descriptors: (*Hypersonic planes, Performance(Engineering)), (*Jet engine fuels, Kerosene), Turbojet engines, Afterburners, Airframes, Design, Fuel consumption, Cooling, USSR.
Identifiers: Translations.

The report evaluates the optimum flight characteristics of a hypersonic aircraft using kerosene fuel.

AD-767 913/7GA PC$3.00/MF$1.45
Air Force Academy Colo Dept of Aeronautics
A PYLON TO DECREASE THE EFFECTS OF EXTERNAL STORES ON THE STABILITY OF AIRCRAFT.
Final rept.,
Edgar W. Lorson, and Lawrence E. Day. Jul 73, 50p Rept no. DFAN-TR-73-5

Descriptors: (*Jet fighters, Stability), (*Bomb racks, *Release mechanisms), (*External stores, Bomb racks), Wind tunnel models, Angle of attack, Aerodynamic characteristics, Flow visualization, Subsonic characteristics, Transonic characteristics.
Identifiers: M-82 bombs(500-lb.), M-117 bombs(750-lb.), Bomb pylons, Multiple ejection racks, Triple ejection racks.

A series of wind tunnel studies were accomplished at the USAFA to determine the effect of a new low side area pylon on the static longitudinal stability of aircraft carrying external stores. Several configurations of MK 82 and M 117 bombs on triple ejection racks and multiple ejection racks were run at Mach numbers of .2, .82 and .91. The static margins for similar bomb configurations on inventory type pylons and new low side area pylons are compared. For the tests at M .2 the loss in static margin for a given configuration on the new low side area pylon was an average of 19% less than that on an inventory type pylon. The average loss in static margin for the transonic runs with the inventory pylon was 8.9% mean aerodynamic chord (MAC) while the same configurations with the new pylon gained an average of 2.2% mean aerodynamic chord (MAC). (Author)

AD-767 919/4GA PC$4.25/MF$1.45
Air Force Academy Colo Dept of Aeronautics
A COMPUTER PROGRAM FOR AIRCRAFT OPTIMAL CONTROL PROBLEMS.
Technical rept.,
Jerry D. Hines, and Juane M. Davis. Jul 73, 115p Rept no. DFAN-TR-73-4

Descriptors: (*Jet planes, Flight control systems), Flight paths, Mathematical models, Atmospheric models, Turning flight, Thrust augmentation, Computer programs.
Identifiers: FORTRAN, J-79 engines, J-79GE-17 engines, Finite difference theory, Control theory, Burroughs 6700 computers.

The report described uses a gradient technique having a rapid convergence rate to investigate problems of aircraft optimal control. The Fortran program for the Burroughs 6700 computer and sample output are included for a minimum time turn (3 dimensional) for an aircraft with thrust vectoring capability. The operation of the program is explained and the program variables are identified. (Author)

AD-767 937/6GA PC$3.00/MF$1.45
Naval Air Development Center Warminster Pa Air Vehicle Technology Dept
PRODUCTION DATA PACKAGE 267 GALLON EXTERNAL FUEL TANK.
Phase rept.,
Albert E. Simkins. 23 Aug 73, 27p Rept no. NADC-73147-30

Descriptors: (*Fuel tanks, Production control), (*Jet fighters, External stores), Specifications, Quality control, Test methods, Naval procurement.
Identifiers: F-14 aircraft.

A production data package was developed for a 267 gallon external fuel tank suitable for use on the F-14 aircraft. (Author)

AD-767 943/4GA PC$19.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
FLIGHT CONTROL OF AIRPLANES AND HELICOPTERS,
V. T. Borodin, and G. I. Rylskii. 27 Sep 73, 339p
Rept no. FTD-MT-24-318-73
Edited machine trans. mono. Upravlenie Poletom Samolstov i Vertoletov, Moscow, 1972 p1-238, by Charles T. Ostertag, Jr.

Descriptors: (*Flight control systems, Performance(Engineering)), (*Aircraft, Flight control systems), Automatic pilots, Helicopters, Vertical take-off planes, Navigation computers, Carrier landings, Automata, USSR.
Identifiers: Translations, Man in the loop control systems.

In the report an analysis is given and fundamental results systematized from foreign investigations on the development of promising means of automation of flight control of aircraft and helicopters. Structural diagrams and descriptions of the control systems of contemporary aircraft and helicopters, flexible aircraft, and also adaptive (self-adjusting, with variable structure, self-organizing) aviation systems are given. Bionic principles of adaptation and the possibility of their use in control systems of aircraft, and also the problems of automation of landing, flight on low and maximally low altitudes, and the arrangement of installed equipment are examined. Methods of reflecting flight information to the pilot, the systems of semiautomatic control, systems for the prevention of collisions of aircraft in the air, landing systems, profile flight and the contemporary complexes of installed equipment are described.

AD-768 068/9GA PC$3.75/MF$1.45
Rand Corp Santa Monica Calif
ANALYSIS OF AIRCRAFT DEVELOPMENT,
Alvin J. Harman. Mar 73, 35p Rept no. P-4976
Presented at the General Session on the Philosophy of Aircraft Development of the Annual Israel Conference on Aviation and Astronautics (15th), Tel Aviv, Israel, 14 Mar 73.

Descriptors: (*Aircraft, *Research program administration), (*Weapon systems, Aircraft), Systems engineering, Armed forces procurement, Costs, Contracts, Decision making, Production control, Aircraft industry.
Identifiers: Technology utilization, Technology transfer.

The report describes speculation on methods that could enhance the production and acquisition of aircraft weapon systems.

AD-768 133/1GA PC$7.50/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
MINIMUM LIFE CYCLE COSTING FOR A V/STOL TRANSPORT,
Thomas W. Smith. 1973, 108p Rept no. USAMC-ITC-1-73-21

Descriptors: (*Short take-off planes, Costs), Vertical take-off planes, Airframes, Spare parts, Maintainability, Life expectancy, Procurement, Computer programs.
Identifiers: Cost estimating relationships, Cost estimates, *Life cycle costing.

The report proposes a new methodology for life cycle costing. In particular, a Vertical/Short Take-off and Landing (V/STOL) transport aircraft is considered. The costs included are those of research and development, production, maintenance, and operation. The minimum cost is found by the minimization of a function of three variables; maximum speed at best altitude, gross take-off weight, and maximum thrust per engine. Several methods of minimization were investigated, including geometric programming, Sequential Unconstrained Minimization Technique (SUMT), and the pattern search technique. The latter method was used with success and numerous computer runs were executed. The impact of the variation of many input parameters is shown in the results. (Author)

JPRS-60104/GA PC$5.25/MF$1.45
Joint Publications Research Service, Arlington, Va.
ECONOMIC EVALUATION OF AIRCRAFT AND SPACECRAFT,
S. A. Sarkisyan, and E. S. Minaev. 24 Sep 73, 189p
Trans of mono. Ekonomicheskaya Otsenka Letatelnykh Apparatov, Moscow, 1972 177p.

Descriptors: (*Aircraft industry, *Economic analysis), Aerospace engineering, Aerospaceplanes, Air transportation, Systems management, Economic forecasting, Cost analysis, USSR, Translations.

The report contains a study of the economic problems of the analysis and selection of optimal versions of complex technical systems (in the example of systems of aircraft and spacecraft). (Author)

N73-29455/5GA PC$3.00/MF$1.45
Laboratorio de Acustica e Sonica, Sao Paulo (Brazil).
ULTRASONIC INSPECTION OF WING SPAR ATTACHMENTS - TOP AND BOTTOM BOOM JOINTS AND LUGS.
L. X. Nepomuceno. 13 Nov 72, 10p TR-7211.621

Descriptors: *Airframes, *Inspection, *Ultrasonic radiation, *Viscount aircraft, *Wings, Flight safety, Nondestructive tests, Reliability engineering, Ultrasonic tests.

For abstract, see STAR 1120

N73-29944/8GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
RESULTS OF GROUND VIBRATION TESTS ON A YF-12 AIRPLANE.
R. J. Wilson, F. W. Cazier, Jr., and R. R. Larson. Aug 73, 93p NASA-TM-X-2880, H-736

Descriptors: *Airframes, *Military aircraft, *Reconnaissance aircraft, *Structural analysis, *Vibration tests, Elastic properties, Mechanical properties, Structural vibration, Vibration measurement.

For abstract, see STAR 1120

PATENT-3 713 750/GA Not available NTIS
Department of the Navy Washington D C
CIRCULATION CONTROL ROTOR SYSTEM.
Patent,
Robert M. Williams. Filed 7 Dec 70, patented 30 Jan 73, 8p Rept nos. PAT-APPL-95 643,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Rotor blades(Rotary wings), *Patents), (*Helicopter rotors, Patents), Flow fields, Flow separation, Lift, Jet flaps, Helicopters.
Identifiers: PAT-CL-416-20.

The patent relates to the rotating blades on a helicopter which are in the shape of a cambered elliptical airfoil with blunt edges. A plurality of slots are employed on the upper surface of the air foil to blow a thin sheet of air tangentially across the surface of the foil and around the trailing edge. Circulation control is achieved by the tangential blowing as the sheet of air adheres to the surface and travels around the trailing edge, detaching beneath the trailing edge at a location determined by the intensity of blowing. The effect of the tangential blowing is relocation of the stagnation stream lines producing increased lift on the foil. The air supplied to the slots is modulated with respect to the azimuth position of the rotor and the speed of the rotating blade so that cyclic control over the lift of the rotor can be accomplished without altering the blade attitude.

PATENT-3 721 408/GA Not available NTIS
Department of the Navy Washington D C
VARIABLE MODE SLING FOR HELICOPTER RECOVERY SYSTEMS.
Patent,
Gene R. Drew, and Bobby C. Layman. Filed 19 Nov 71, patented 20 Mar 73, 6p Rept nos. PAT-APPL-200 387,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D. C. 20231 $0.50.

Descriptors: (*Safety devices, *Patents), (*Helicopters, Recovery), Parachute descents, Cables(Mechanical), Deployment, Retro rockets.
Identifiers: PAT-CL-244-139, Safety lowering devices.

The invention relates to sling apparatus, designed primarily for recovery of disabled helicopters, but it is understood that it can be used for any purposes for which it is found applicable. The present invention provides a multi-mode sling capable of being oriented to handle the disabled aircraft at high velocity to avoid excessive pitching, and the sling geometry changed to accommodate a low speed recovery.

PATENT-3 721 409/GA Not available NTIS
Department of the Navy Washington D C
CONTROLLED MULTI-STAGE DECREASING DRAG PARACHUTE.
Patent,
Jon T. Matsuo, and Lawrence E. Neipling. Filed 25 Jun 71, patented 20 Mar 73, 6p Rept nos. PAT-APPL-156 750,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Drag parachutes, *Patents), Parachute fabrics, Parachute descents, Cordage.
Identifiers: PAT-CL-244-152.

The patent concerns a controlled multi-stage decreasing drag parachute. The cloth portion of the canopy is provided with a centerline connecting the apex thereof to the load. One or more sets of suspension lines are connected at their upper ends to respective spaced points about the periphery. Their lower ends are slidably restrained around the centerline, the restraining means being releasable upon the application of a predetermined force to reduce the parachute drag area.

1D. Aircraft Flight Control and Instrumentation

AD-767 763/6GA PC$3.75/MF$1.45
Sanders Associates Inc Nashua N H
TACTILE DISPLAY FOR AIRCRAFT CONTROL.
Final technical rept. 1 Jul 72-31 Aug 73,
Don H. Ross, Richard A. Sanneman, William H. Levison, Robert B. Tanner, and Thomas J. Triggs. 31 Aug 73, 98p
Contract N00014-73-C-0031, ARPA Order-2108
Prepared in cooperation with Bolt Beranek and Newman, Inc., Cambridge, Mass. Behavioral Science Div.

Descriptors: (*Touch, Instrumentation), (*Pilots, *Man-machine systems), (*Instrument flight,

*Flight control systems), Sensory mechanisms, Sensation(Physiology), Vibration, Electric currents, Logic circuits, Stimulation, Experimental data.
Identifiers: *Tactile instrumentation, Tactors.

The final report presents a set of manual tracking experiments that have been conducted to determine the suitability of tactual displays for presenting flight-control information in multi-task situations. Although tracking error scores are considerably greater than scores obtained with a continuous visual display, preliminary results indicate the inter-task interference effects are substantially less with the tactual display in situations that impose high visual scanning workloads. The single-task performance degradation found with the tactual display appears to be a result of the coding scheme rather than the use of the tactual sensory mode per se. Analysis with the state-variable pilot/vehicle model shows that reliable predictions of tracking errors can be obtained for a limited set of system configurations once the pilot-related model parameters have been adjusted to reflect the pilot-display interaction. (Author)

AD-768 345/1GA PC$4.75/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
AN INVESTIGATION OF PATTERN RECOGNITION OF AIRCRAFT ATTITUDES INDICATOR DISPLAYS.
Master's thesis,
Robert Parker Bateman. Jun 73, 53p Rept no. GA/EE/73-3

Descriptors: (*Attitude indicators, *Human engineering), (*Aviation accidents, Reduction), Psychophysics, Flight instruments, Man-machine systems, Pattern recognition, Aviation safety, Programming(Computers), Models(Simulations), Test methods, Graphics, Visual perception, Theses.
Identifiers: Spacial disorientation.

Spatial disorientation accident statistics are reviewed, along with unsuccessful attempts to prevent these aircraft accidents. The lack of a theoretical basis for flight instrument design is noted. A systems approach to the problem is proposed, which requires a knowledge of the human visual system. It is suggested that attitude indicator displays, the interface between man and machine, should be designed to be compatible with an internal model of spatial position. Orientation in space by the use of flight instruments is identified as a pattern recognition problem. A Fourier transform model of the human visual system is used to evaluate and classify attitude indicator displays. An algorithm is proposed for separating patterns. (Modified author abstract)

2. AGRICULTURE

N73-28980/3GA PC$3.00/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
VISUAL PROBLEMS CONCERNING LANDING ACCIDENTS.
N. Iwataki. Aug 73, 14p NASA-TT-F-15054
Contract NASW-2481
Tran-Transl. Into English from Koku Igaku Jikkentai Hohoku (Japan), V. 9, No. 1, Jun. 1968 p 70-75.

Descriptors: *Aircraft accidents, *Aircraft landing, *Flight paths, *Glide paths, *Visual flight, Flight hazards, Flight safety, Instrument landing systems, Landing aids, Runway conditions.

For abstract, see STAR 1120

N73-28981/1GA PC$3.75/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
COMPUTATION OF UNSTEADY AERODYNAMIC FORCES ON HELICOPTER ROTOR BLADES.
J. J. Costes. Aug 73, 34p NASA-TT-F-15039
Contract NASW-2481
Tran-Transl. Into English from la Rech. Aerosp. (Paris), No. 2, 1972 p 91-106.

Descriptors: *Aerodynamic characteristics, *Force distribution, *Helicopter performance, *Lift, *Rotary wings, Aerodynamic forces, Applications of mathematics, Numerical analysis.

For abstract, see STAR 1120

N73-28982/9GA PC$3.00/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
TUPOLEV: ITS 'MOUSTACHES' WERE TOO LONG AND FRAGILE.
D. Walter. Aug 73, 7p NASA-TT-F-15062
Contract NASW-2481
Tran-Transl. Into English of "Tupolev: Ses 'Moustaches' Etaient Trop Longues et Fragiles" Science et Vie, Aug. 1973 p 44-47.

Descriptors: *Aircraft accidents, *Canard configurations, *Crashes, *Structural failure, *Tu-144 aircraft, Aircraft accident investigation, Aircraft stability, Flight characteristics.

For abstract, see STAR 1120

N73-28985/2GA PC$7.50/MF$1.45
Cranfield Inst. of Technology (England). Centre for Transport Studies.
AN APPRAISAL OF THE RIGID AIRSHIP IN THE UK FREIGHT MARKET.
Final Report.
S. Coughlin. Mar 73, 108p CRANFIELD-CTS-3
Subm-Sponsored by Sci. Res. Council.

Descriptors: *Airships, *Commerce, *Cost analysis, *Inflatable structures, *Operations research, Aerodynamic configurations, Economics, Materials handling, Systems analysis.

For abstract, see STAR 1120

N73-28987/8GA PC$5.25/MF$1.45
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
FORE AND AFT ELASTIC RESPONSE CHARACTERISTICS OF SIZE 34X9.9, TYPE 7, 14 PLY-RATED AIRCRAFT TIRES OF BIAS PLY, BIAS BELTED, AND RADIAL BELTED DESIGN.
M.S. Thesis - George Washington Univ., Washington, D. C.
J. A. Tanner. 6 May 73, 65p NASA-TM-X-69570

Descriptors: *Aircraft tires, *Elastic properties, *Performance tests, Data acquisition, Deformation, Equipment specifications, Loads (Forces).

For abstract, see STAR 1120

N73-28988/6GA PC$5.25/MF$1.45
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
NUMERICAL SOLUTION OF EQUATIONS GOVERNING LONGITUDINAL SUSPENSION LINE WAVE MOTION DURING THE PARACHUTE UNFURLING PROCESS.
Ph.D. Thesis - George Washington Univ., Washington, D. C.
L. R. Poole. May 73, 64p NASA-TM-X-69498

Descriptors: *Aerodynamic characteristics, *Aerodynamic forces, *Equations of motion, *Parachute descent, Applications of mathematics, Data acquisition, Numerical analysis.

For abstract, see STAR 1120

N73-28989/4GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
INVESTIGATION OF COAXIAL JET NOISE AND INLET CHOKING USING AN F-111A AIRPLANE.
T. W. Putnam. Aug 73, 32p NASA-TN-D-7376, H-685

Descriptors: *Aircraft noise, *F-111 aircraft, *Jet exhaust, *Noise intensity, *Noise spectra, Acoustic measurements, Acoustic properties, Noise intensity, Noise propagation.

For abstract, see STAR 1120

N73-28990/2GA PC$5.25/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
COMPUTER SIMULATION OF AIRCRAFT MOTIONS AND PROPULSION SYSTEM DYNAMICS FOR THE YF-12 AIRCRAFT AT SUPERSONIC CRUISE CONDITIONS.
S. C. Brown. Aug 73, 65p NASA-TM-X-62245, A-4840

Descriptors: *Computerized simulation, *Flight characteristics, *Military aircraft, *Propulsion system configurations, *Reconnaissance aircraft, *Supersonic speeds, Aerodynamic characteristics, Aerodynamic configurations, Aircraft performance, Data acquisition.

For abstract, see STAR 1120

2C. Agricultural Engineering

AD-768 060/6GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
MEANS FOR INCREASING THE EFFICIENCY AS AERIAL TREATMENT,
Yu. G. Logachev. 17 Sep 73, 16p Rept no. FTD-HT-23-839-73
Edited trans. of Mekhanika Protsessov Aviatsionnogo Opryskivaniya i Rasseivaniya Sypuchikh Veshchestv (USSR) v3 n219 p3-16 1971, by Michael L. Seidel.

Descriptors: (*Agriculture, Pest control), Efficiency, Aircraft, Sprays, Particles, Gas flow, Atmospheric motion, USSR.
Identifiers: Translations, Sprayers, Dusters, *Crop dusting, *Spraying.

Aerial treatment has become quite prevalent in agriculture. The efficiency of aerial treatment depends on the biological and technical capabilities, and how efficiently these capabilities are used. The author singles out the following basic indices of aerial treatment: Evenness of cover of the treated surface by the material; average amount of material per unit of treated surface; the working width; fractional makeup of drops during spraying; and, nature of the coverage of plants by the material.

E73-11091/GA PC$3.00/MF$1.45
Tennessee Univ., Knoxville. Dept. of Plant and Soil Science.
UTILIZING ERTS IMAGERY TO DETECT PLANT DISEASES AND NUTRIENT DEFICIENCIES, SOIL TYPES AND SOIL MOISTURE LEVELS.
Interim rept. Mar-Sep 73,
W. L. Parks, J. I. Sewell, J. W. Hilty, and J. C. Rennie. 29 Sep 73, 16p NASA-CR-135559
Contract NAS5-21873
Original contains imagery. Original photography may be purchased from the EROS Data Center, 10th and Dakota Ave., Sioux Falls, S. D. 57198. ERTS.

Descriptors: Diseases, Plants(Botany), Soil moisture, Drainage patterns, Sediments, Timber identification, Tennessee, Earth resources program, Forests, Soil science.

The author has identified the following significant results. The delineation of soil associations and detection of drainage patterns, erosion and sedimentation through the use of ERTS-1 imagery are shown. Corn blight and corn virus could not be detected from ERTS-1 and detection of forest composition was at a very low probability.

PB-223 908/5GA PC$4.75/MF$1.45
Florida Univ., Gainesville. Dept. of Agricultural Engineering.
ENERGY AND FLOW REQUIREMENTS FOR CHOPPING WATER HYACINTHS.
Research rept.,
John Struthers Stewart III. 1972, 54p W73-14759, OWRR-A-017-FLA(4)
Contract DI-14-31-0001-3809

Descriptors: (*Agricultural machinery, Test methods), (*Aquatic weeds, Harvesting), Design, Weed control, Removal, Drying, Power, Efficiency, Theses, Cutting.
Identifiers: Harvestors(Machinery), Aquatic weed control, Water hyacinths.

The object was to investigate the flow and energy requirements for chopping fresh water hyacinths. The basic unit tested was an International 350 Forage Harvester. The machine has both a feed mechanism and a cutting unit. For this study the two were powered through separate sources so each could be varied independently. Tests were conducted using various feed rates, lengths of cut, speed of cutting blades, discharge conditions feed mechanisms and sheer bar clearance. The capacity of the forage harvester was more dependent upon the feeding mechanism than the power available to drive the unit. The average horsepower consumed was related to the feed rate expressed in tons per minute by the formula P = 35.2 F + 2. The capacity of the unit could be increased with a different type of feed mechanism.

2D. Agronomy and Horticulture

COM-73-11594/1GA Reprint
Georgia Univ., Athens. Coll of Agricultural Experiment Stations.
EFFECTS OF FOLIAR APPLICATIONS OF A BENOMYL-OIL-WATER EMULSION ON THE EPIDEMIOLOGY OF 'CERCOSPORA L' LEAF SPOT ON PEANUTS,
D. H. Smith, and F. L. Crosby. 29 Mar 73, 4p
NOAA-73081719
Prepared in cooperation with National Weather Service, Ga.
Pub. in Phytopathology, v62 n9 p1029-1031 Sep 72.

Descriptors: (*Peanut plants, *Plant diseases), (*Fungicides, Peanut plants), (*Fungi, Plant diseases), Epidemiology, Plant pathology, Leaves(Botany), Emulsions, Southeast United States.
Identifiers: Cercospora arachidicola, Benomyl.

Foliar applications of a benomyl-oil-water emulsion suppressed the development of peanut leaf spot epidemics more effectively than foliar applications of a benomyl-water suspension. Foliar applications of an oil-water emulsion were ineffective. The benomyl-oil-water emulsion treatment delayed the progress of the epidemic by arresting development of established lesions induced by Cercospora arachidicola, suppressing sporulation of C. arachidicola on peanut leaflets, and reducing the rate of peanut leaflet abscission. (Author)

COM-73-11628/7GA PC$3.00/MF$1.45
Texas A and M Univ., College Station. Dept. of Biology.
THE EFFECTS OF ULTRAVIOLET SOLAR RADIATION OF PHOTOSYNTHESIS IN AGRICULTURAL CORPS.
Final rept.,
K. J. McCree, and Melvin E. Keener. 31 Jul 73, 48p NOAA-73090512
Contract NOAA-1-35360

Descriptors: (*Farm crops, Solar ultraviolet radiation), (*Photosynthesis, Farm Crops), Earth atmosphere, Solar radiation, Turbidity, Optical properties, Plant tissues.

The report is a study of the possible effects of solar U.V. (Ultraviolet radiation) on the photosynthetic rates of agricultural crops. Experimental data were obtained on incidence, penetration and effectiveness of solar U.V. The absolute spectral irradiance of sun, sky and sun-plus-sky (global) radiation on a horizontal surface, was measured on 13 clear days. The absolute level of the radiation decreased with increasing turbidity, as expected. Differences in U.V. photosynthetic rates of field and laboratory-grown plants were examined. The final conclusion was that the relative contribution of photosynthesis in the U.V. to the photosynthetic rates of field-grown crop plants is small and constant, independent of species and atmospheric conditions. In view of the low U.V. transmittance of epidermal tissue of field-grown crop plants, it seems unlikely that significant U.V. damage to photosynthesizing tissue could occur in nature.

JPRS-59968/GA PC$7.25/MF$1.45
Joint Publications Research Service, Arlington, Va.
SPRING WHEAT,
P. K. Ivanov. 5 Sep 73, 334p
Trans. of mono. Yarovaya Pshenitsa, Moscow, 1971 328p.

Descriptors: (*Wheat plants, USSR), Classifications, Distribution(Property), Plant growth, Acclimatization, Plant nutrition, Cultivation, Plant genetics, Fertilizers, Seeds, Germination, Harvesting, Weed control, Irrigation, Plant diseases, Insect control, Handbooks, Translations.
Identifiers: *Spring wheat plants.

The report contains data on the national economic significance of spring wheat, its biological features, varieties and varietal zoning. A special section is devoted to methods of growing the wheat under irrigated conditions.

2E. Animal Husbandry

AD-767 964/0GA PC$3.00/MF$1.45
Naval Aerospace Medical Research Lab Pensacola Fla
ANIMAL DISEASE SURVEY OF NAVASSA ISLAND, WEST INDIES.
Special rept.,
Richard J. Brown, James L. Kupper, W. C. Hixson, John Bowman, and Robert O. Baker. 25 Jun 73, 34p Rept no. NAMRL-SR-73-3

Descriptors: (*Animals, Diseases), West Indies, Veterinary medicine, Rats, Birds, Goats, DDT, Mercury, Tissues(Biology), Plutonium, Protozoa, Parasites, Central nervous system, Pathology, Integumentary diseases, Skin.
Identifiers: Zoonoses, Navassa Island, Malaria.

Navassa Island is located 18 degrees 25 minutes north and 75 degrees and zero minutes west and is the closest American possession to the United States Naval Station at Guantanamo Bay, Cuba. The island is uninhabited. The wild animals studied on Navassa Island included goats, rats, and several species of birds. Low levels of mercury and DDT were detected in these animals. Radioisotope analysis of animal tissue revealed low levels of plutonium 238 and 239. Light microscopy examination of tissue demonstrated sarcosporidiosis in wild rats, central nervous system degeneration in the goat compatible with a slow virus disease known as scrapie, avian malaria and several pathogenic metazoan parasites in various vital organs. A contact dermatitis in man caused by the tree, Metopium taxiferum was identified. Sera from goats, rats, birds and bats were negative for rabies and avian influenza. (Modified author abstract)

LA-UR-73-821/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
APPLICATION OF FLOW MICROFLUOROMETRY (FMF) AND CELL SORTING TECHNIQUES TO THE CONTROL OF ANIMAL DISEASES.
L. S. Cram, J. C. Forslund, P. K. Horan, and J. A. Steinkamp. 1973, 40p CONF-730631-1

Descriptors: (*Diseases, *Diagnostic techniques), Animal cells, Animals, Fluorescence, In vitro.

For abstract, see NSA 28 06, number 15145.

ORNL-TIRC-73-6/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
DISEASES AND TOXICOLOGIC PHENOMENA IN PSITTACINE BIRDS: A BIBLIOGRAPHY,
Helga B. Gerstner. Mar 73, 12p* TIP-73-84-1106
Contract W7405-eng-26

Descriptors: (*Toxic diseases, *Birds), (*Bird diseases, Bibliographies), (*Bibliographies, Bird diseases), Toxicology, Ornithosis, Domestic animals, Veterinary medicine.
Identifiers: Psittacines, *Parrots.

The bibliography of 55 selected references on diseases and toxicologic phenomena in psittacine birds was compiled by the Toxicology Information Response Center in answer to a specific request. Coverage of the abstract literature spans the years 1962 to 1973. The citations are listed chronologically by year and alphabetically by first author within each year.

PB-224 404/4GA MF$1.45
National Research Council, Washington, D.C. Committee on Animal Nutrition.
ATLAS OF NUTRITIONAL DATA ON UNITED STATES AND CANADIAN FEEDS.
Feb 72, 788p
Contract PH-43-64-44
International Standard Book no. 0-309-01919-2
Library of Congress Catalog Card no. 76-612077.
Paper copy available from National Academy of Science Printing and Publishing Office, 2101 Constitution Ave.

Descriptors: (*Feeding stuffs, *Animal nutrition), (*United States, Feeding stuffs), (*Canada, Feeding stuffs), Livestock, Food composition, Nutritive value, Diets, Mixtures, Tables(Data), Farm crops, Forage grasses, Silage, Vitamin and mineral preparations, Proteins, Classifications.

The reference work provides nutritionally significant information on more than 6,000 animal feeds. It lists the nutrients and biological data applicable to each feed and shows the titer, nutritive value index, weight per liter, and other information necessary for preparing diets and feed mixtures for animals.

2F. Forestry

E73-11052/GA PC$3.00/MF$1.45
Pacific Southwest Forest and Range Experiment Station, Berkeley, Calif.
INVENTORY OF FOREST AND RANGELAND AND DETECTION OF FOREST STRESS.
Progress rept., no. 5, 1 Jul-31 Aug 73,
Robert C. Heller, Robert C. Aldrich, Frederick P. Weber, and Richard S. Driscoll. 20 Sep 73, 17p
NASA-CR-133933
Contract NASA Order S-70251-AG

Descriptors: Forest management, Rangelands, Timber inventory, Colorado, Georgia, Black Hills(SD-WY), Earth resources program, Stresses, Multispectral photography, Land use.

The author has identified the following significant results. At the Atlanta site (226B) it was found that bulk color composites for October 15, 1972, and April 13, 1973, can be interpreted together to dis-

close the location of the perennial Kudzu vine (Pyeraria lobata). Land managers concerned with Kudzu eradication could use ERTS-1 to inventory locations over 200 meters (660 feet) square. Microdensitometer data collected on ERTS-1 bulk photographic products for the Manitou test site (226C) have shown that the 15-step gray-scale tablets are not of systematic equal values corresponding to 1/14 the maximum radiant energy incident on the MSS sensor. The gray-scale values present a third-order polynomial function rather than a direct linear relationship. Although data collected on step tablets for precision photographic products appear more discrete, the density variation within blocks is almost as great as variations between blocks. These system errors will cause problems when attempting to analyze radiometric variances among vegetation and land use classes.

E73-11092/GA PC$4.00/MF$1.45
Earth Satellite Corp., Berkeley, Calif.
ERTS DATA USER INVESTIGATION TO DEVELOP A MULTISTAGE FOREST SAMPLING INVENTORY SYSTEM.
Progress rept. Feb-Sep 73,
Philip G. Langley, and J. W. Van Roessel. 25 Sep 73, 37p NASA-CR-135560
Contract NAS5-21853
Original contains imagery. Original photography may be purchased from the EROS Data Center, 10th and Dakota Ave., Sioux Falls, S. D. 57198. ERTS.

Descriptors: Forests, Timber identification, California, Earth resources program, Digital data, Multispectral band scanners.

The author has identified the following significant results. A unique digital timber volume estimation system was developed for use with the MSS CCT tapes. The system was tested on a 64-square mile area in Northern California's Trinity Alps. The outcome of a systematic experiment, in which several possible combinations of bands five and seven and a contrast measure were tried, showed that an estimated gain in precision of 50% can be obtained in a multistage sampling design. The difference between bands five and seven proved to be of special importance for the estimation of biomass in the form of timber volume. In addition, an interpretation model for high flight U2 photographs was developed. A maximum multiple correlation coefficient of 0.74 was obtained for the regression model, explaining 55% of the variation in timber volume as estimated from aerial photos and ground measurements. An interpretation model for MSS color composites is in the testing stage.

E73-11093/GA PC$3.00/MF$1.45
Earth Satellite Corp., Berkeley, Calif.
EVALUATION OF USEFULNESS OF SKYLAB EREP S-190 AND S-192 IMAGERY IN MULTISTAGE FOREST SURVEYS.
Progress rept. no. 5, 1 Aug-30 Sep 73,
Philip G. Langley. 30 Sep 73, 5p NASA-CR-135561
Contract NAS9-13289

Descriptors: Timber inventory, Forests, California, EREP, Skylab program, Digital systems, Multispectral band scanners, Multispectral band cameras.

The author has identified the following significant results. A unique digital timber volume estimation system with digital data for two ERTS-1 MSS bands was tested. The system was tested on a 64-square mile area in Northern California's Trinity Alps. The outcome of a systematic experiment in which possible combinations of the two bands (MSS 5 and 7) were tried, showed than an estimated gain in precision of 50% can be obtained in a multistage sampling design. Especially the difference between the two bands proved to be of major importance for the estimation of biomass in the form of timber volume. Identical tests as the one performed will be conducted with various S-192 bands when the digital data become available.

PB-224 099/2GA PC$2.75/MF$1.45
North Central Forest Experiment Station, St. Paul, Minn.
LIGHT, SOIL MOISTURE, AND TREE REPRODUCTION IN HARDWOOD FOREST OPENINGS.
Forest Service research paper (Final),
Leon S. Minckler, John D. Woerheide, and Richard C. Schlesinger. 1973, 11p FSRP-NC-89

Descriptors: (*Forest trees, Plant reproduction), Light(Visible radiation), Plant growth, Hardwoods, Height, Soil water, Illinois.

Light, soil moisture, and tree reproduction were measured at five positions in six openings on each of three aspects in southern Illinois. Amount of light received was clearly related to position in the openings, opening size, and aspect. More moisture was available in the centers of the openings, although 4 years after openings were made the differences between center and edge positions decreased considerably. The abundance of reproduction was not related to opening size, but height growth was best in the centers of larger openings.

PB-224 100/8GA PC$3.00/MF$1.45
North Central Forest Experiment Station. St. Paul, Minn.
VEGETATION DATA COLLECTION IN TEMPERATURE FOREST RESEARCH NATURAL AREAS.
Forest Service Research Paper (Final),
Lewis F. Ohmann. Sep 73, 39p FSRP-NC-92

Descriptors: (*Forestry, Surveys), Vegetation, Plants(Botany), Ecology, Manuals, Sampling.

Despite a long history of research natural area preservation by the USDA Forest Service and other governmental agencies, ecological baseline data have been gathered for few areas. This report presents a framework, including possible sampling schemes, for ecological baseline data collection by non-professionals working under the consulting supervision of professional ecologists, botanists, or foresters.

PB-224 144/6GA PC$2.75/MF$1.45
North Central Forest Experiment Station, St. Paul, Minn.
BLACK WALNUT GROWTH BETTER ON DEEP, WELL-DRAINED BOTTOMLAND SOILS.
Final rept.,
Craig K. Losche. Sep 73, 4p FSRN-NC-154

Descriptors: (*Forest trees, Soils), Alluvium, Soil water, Drainage, Illinois.
Identifiers: Juglans nigra.

Site requirements of a 25 year old plantation grown black walnut on floodplains in southern Illinois were studied. Depth to a gravel layer was the only soil factor that significantly influenced height growth. There was a relationship between internal soil drainage and height growth. (Author)

PB-224 148/7GA PC$2.75/MF$1.45
North Central Forest Experiment Station, St. Paul, Minn.
TAMARACK SEEDLINGS PROSPER ON BROADCAST BURNS IN MINNESOTA PEATLAND.
Forest Service research note (Final),
William F. Johnston. Sep 73, 4p FSRN-NC-153

Descriptors: (*Forest trees, Plant reproduction), Seeds, Organic soils, Forest fires, Minnesota.
Identifiers: Larix laricina, Prescribed burning, Peatland.

Six-year results from two strips clearcut and broadcast burned in a peatland forest indicate that tamarack will be an important component in new stands on such areas if even a few seed-bearing tamaracks are within three chains. (Author)

3. ASTRONOMY AND ASTROPHYSICS

3B. Astrophysics

AD-767 746/1GA PC$2.75/MF$1.45
Applied Scientific Research Corp of Thailand Bangkok
THE FINE STRUCTURE OF THE SOLAR CHROMOSPHERE.
Annual rept. no. 3, 1 Aug 71-31 Jan 73,
Rawi Bhavilai. Mar 73, 18p ARDG(FE)-344-3
Grant DA-CRD-AFE-a92-544-68-g102
See also report dated Aug 71, AD-730 761.

Descriptors: (*Chromosphere, Atomic spectroscopy), (*Telescopes, Design), Solar spectrum, Instrumentation, Thailand.
Identifiers: Fine structure, Astronomical telescopes.

The design, construction and details of a 150 mm f/10 solar chromospheric telescope recently installed at the Department of Physics is described. The optical components, the Zeiss H-alpha Monochromator and the Acme cinecamera are placed on a 2.30 meter long spar mounted equatorially. Motion in hour angle is powered by a synchronous motor, while guiding is done through a set of differential gear driven by a servomotor responding to an error signal from the Zeiss Photoelectric Sun Guiding Tube. This also controls guiding in the declination axis. The telescope performs satisfactorily and is in continuous operation in the time-lapse cinematographic mode. The results of reduction of the data obtained in 1971 are presented. Isophotometric studies of the limb photographs confirm that bright mottles inside the limb corresponds to spicules just outside. On the disk, more evidences are obtained in contradiction to the idea that dark mottles are spicules. The bright streaks discovered by Bhavilai (1968) are confirmed. Apparent material motions in loops are found between dark mottles near the solar limb. (Author)

AD-767 836/0GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
GYRO SYNCHROTRON RADIATION FROM THERMAL PLASMAS,
P. K. Shukla, and K. P. Singh. 11 Apr 72, 3p
AFCRL-TR-73-0468
Grant EOOSR-70-0070
Prepared in cooperation with Department of Plasma Physics, Inst. of Physics, Umea (Sweden).
Availability: Pub. in Physica Scripta, v5 p217-218 1972.

Descriptors: (*Solar corona, Extraterrestrial radio waves), Charged particles, Emissivity, India, Plasma physics, Temperature.
Identifiers: *Synchrotron radiation.

The gyro-synchrotron radiation from the solar coronal plasma is investigated with special regard to temperature effects. The influence of non-zero temperature is to enhance the radiated synchrotron power from the solar coronal plasma. The authors observe that fast test charges radiate more power than slow charges. (Author)

AD-767 837/8GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
GENERATION OF BREMSSTRAHLUNG X-RAYS FROM SOLAR CORONA,
R. N. Singh, and R. Y. Prasad. 21 Apr 71, 5p
AFCRL-TR-73-0467
Grant EOOAR-70-0070
Presented at the convention organized by the Physical Research Committee of the CSIR at the Th.D.S.B. Government Coll., held at Naini Tal (India) in Apr 70. Revision of report dated 14 Sep 70.
Availability: Pub. in Indian Jnl. of Pure and Applied Physics, v9 p833-836 Oct 71.

Descriptors: (*Solar corona, Bremsstrahlung), (*Solar radiation, X rays), Chromosphere, Ionosphere, Electrons, Pair production, India.
Identifiers: Electron ion interactions, *Solar x rays, Electron atom interactions.

The free-free transition of an electron in the Coulomb field of an ion is considered to produce bremsstrahlung radiation from the solar corona. This process covers a wide range of the electromagnetic spectrum. With the help of electron and ion density distribution, thermal equilibrium temperature and its height variation, the X-ray flux in the wavelength range 1-100A arising from solar corona has been computed. The solar X-ray flux reaching the ionospheric height has been compared with the bremsstrahlung X-ray generated by energetic particle precipitation. The special observed features have been discussed in terms of well-known coronal phenomena. (Author)

AD-767 971/5GA PC$2.75/MF$1.45
Stanford Univ Calif Inst for Plasma Research
PARTICLE ACCELERATION IN SOLAR FLARES,
Peter A. Sturrock. Sep 73, 19p Rept no. SU-IPR-541
Contract N00014-67-A-0112-0062, Grant NGL-05-020-272

Descriptors: (*Solar flares, Solar radiation), Extraterrestrial radio waves, X rays, Plasma physics.
Identifiers: Solar radio emission, Solar x rays.

A review of observational data supports the proposal that there are two distinct phases of particle acceleration in solar flares. 'Phase 1' is associated with the flash phase and is here interpreted as acceleration during field-line reconnection. 'Phase 2' is associated with Type II and Type IV radio bursts, and is ascribed to stochastic acceleration in the turbulent plasma behind a magnetohydrodynamic shock formed ahead of an ejected plasmoid. (Author)

AD-768 245/3GA PC$3.25/MF$1.45
Rand Corp Santa Monica Calif
THE MARINER 9 PRIMARY CONTROL NET OF MARS,
Merton E. Davies. Apr 73, 21p Rept no. P-5013
Presented at ASP Technical Program of American Society of Photogrammetry and American Congress on Surveying and Mapping Convention, Washington, D. C., 11-16 Mar 73.

Descriptors: (*Mars(Planet), Photogrammetry), Mars probes, Mapping.
Identifiers: Mariner, Mariner 9 satellite, Spaceborne photography.

A planetwide control net of Mars is being derived photogrammetrically from the television pictures that were returned by Mariner 9. Such a control net is required by cartographers to relate the coordinate system to landmarks and topography. Although the pictures cover the entire Mars surface, there are gaps in the low-resulution coverage. The vidicon camera, which produced the photos used in the control net computations, is a poor instrument for photogrammetric analysis because the electronic distortions are large and the format is small. The coordinate system incorporates a new direction for the spin axis of Mars, a prime meridian defined by a particular crater (Airy-O) on the surface, and a particular reference spheroid for areographic coordinates. The computation of the primary control net is a continuing project; as of April 1973 it contained 1340 control points. (Author)

COM-73-11647/7GA PC$2.75/MF$1.45
National Environmental Satellite Service, Washington, D.C.
OPERATIONAL PROCESSING OF SOLAR PROTON MONITOR DATA.
Technical memo.,
Louis Rubin, Henry L. Phillips, and Stanley R. Brown. Aug 73, 24p NOAA-TM-NESS-49 NOAA-73091908

Descriptors: (*Solar radiation, Data processing), Scientific satellites, Proton counters, Solar flares, Computer systems hardward, Computer programming.
Identifiers: *Solar protons, ITOS satellites.

Described herein is the operational processing of data obtained from the solar proton monitor sensor flown on environmental satellites of the new TIROS (television infrared observation satellite) series named ITOS (improved TIROS operational satellite). Hardware systems aboard the ITOS are discussed and the software procedures relevant to the data recovery, recording, and transmission problems are described. Included are descriptions of tape formats, message formats, data location procedures, data frame contents, and a partial index of processed data available in archival form. (Author)

COM-73-50681-346-1/GA PC-NCC/MF$1.45
National Geophysical and Solar-Terrestrial Data Center, Boulder, Colo.
SOLAR-GEOPHYSICAL DATA NUMBER 346, JUNE 1973. PART I (PROMPT REPORTS). DATA FOR MAY 1973, APRIL 1973.
Jun 73, 132p SGD-CRPL-FB-346-Pt-1 NOAA-73071704
Paper copy available from National Climatic Center, Attn: Publications. Federal Bldg., Asheville, N.C. 28801. Subscription $30.50/year includes Part 1 (Prompt Reports) and Part 2 (Comprehensive Reports); $15.50/year for either part including extra issue; $1.25/copy for either part.

Descriptors: (*Sunspots, Tables(Data)), (*Solar flares, Tables(Data)), (*Solar radio emission, Tables(Data)), Magnetic storms, Cosmic rays, Solar x rays.
Identifiers: Pioneer 6 spacecraft, Pioneer 7 spacecraft, Pioneer 8 spacecraft, Pioneer 9 spacecraft.

Prompt reports are given on data for May 1973 and April 1973. These deal with alert periods, daily solar indices, solar flares, solar radio waves and spacecraft observations.

COM-73-50681-346-2/GA PC-NCC/MF$1.45-copy
National Geophysical and Solar-Terrestrial Data Center, Boulder, Colo.
SOLAR-GEOPHYSICAL DATA NUMBER 346, JUNE 1973. PART II (COMPREHENSIVE REPORTS). DATA FOR DECEMBER 1972, NOVEMBER 1972, AND MISCELLANEA.
Jun 73, 62p SGD-CRPL-FB-346-Pt-2 NOAA-73071703
Paper copy available from National Climatic Center, Attn: Publications. Federal Bldg., Asheville, N.C. 28801. Subscription $30.50/year includes Part 1 (Promt Reports) and Part 2 (Comprehensive Reports); $15.50/year for either part including extra issue; $1.25/copy for either part.

Descriptors: (*Solar flares, Tables(Data)), (*Solar radio emission, Tables(Data)), (*Solar x rays, Tables(Data)), Cosmic rays.
Identifiers: Explorer 41 satellite.

This issue provides comprehensive data for December 1972 and November 1972 on solar flares, solar radio waves, solar X-ray radiation and solar proton monitoring. It also has miscellaneous data on cosmic rays, neutron monitors for January through March 1973.

COM-73-50681-348-1/GA PC-NCC/MF$1.45
National Geophysical and Solar-Terrestrial Data Center, Boulder, Colo.
SOLAR-GEOPHYSICAL DATA NUMBER 348, AUGUST 1973. PART I(PROMPT REPORTS). DATA FOR JULY 1973, JUNE 1973.
Aug 73, 120p SGD-CRPL-FB-348-Pt-1 NOAA-73091402
See also Part 2, COM-73-50681-348-2.
Paper copy available from National Climatic Center, Attn: Publications. Federal Bldg., Asheville, N.C. 28801. Subscription $30.50/year includes Part 1 (Prompt Reports) and Part 2 (Comprehensive Reports); $15.50/year for either part including extra issuc. $1.25/copy for either part.

Descriptors: (*Solar activity, Statistical data), Solar flares, Sunspots, Solar radio emission, Solar x rays, Solar cosmic rays, Sudden ionospheric disturbances, Magnetic storms, Ionospheric propagation, Tables(Data).
Identifiers: Pioneer 9 satellite, Interplanetary magnetic field.

Reports are given on data for July 1973 and June 1973. These deal with alert periods, daily solar indices, solar flares, solar radio waves and spacecraft observations.

COM-73-50681-348-2/GA PC-NCC/MF$1.45
National Geographical and Solar-Terrestrial Data Center. Boulder, Colo.
SOLAR-GEOPHYSICAL DATA NUMBER 348, AUGUST 1973. PART II (COMPREHENSIVE REPORTS). DATA FOR FEBRUARY 1973, JANUARY 1973, AND MISCELLANEA.
Aug 73, 52p SGD-CRPL-FB-348-Pt-2 NOAA-73091403
See also Part 1, COM-73-50681-348-1.
Paper copy available from National Climatic Center, Attn: Publications. Federal Bldg., N.C. 28801. Subscription $30.50/year includes part 1 (Prompt Reports) and Part 2 Comprehensive Reports); $15.50/year for either part including extra issue. $1.25/copy for either part.

Descriptors: (*Solar activity, Statistical data), Solar flares, Solar radio emission, Solar x rays, Solar cosmic rays.
Identifiers: Solar protons, Solar neutrons, SOLRAD 10 satellite, Explorer 44 satellite.

The issue provides comprehensive data for February 1973 and January 1973 on solar flares, solar radio waves, solar X-ray radiation and solar proton monitoring. It also has miscellaneous data on cosmic rays, neutron monitors for May 1973.

JPRS-60153/GA PC$2.75/MF$1.45
Joint Publications Research Service, Arlington, Va.
SOME PROBLEMS IN THE DESIGNING OF LARGE MIRROR RADIOTELESCOPES,
L. D. Bakhrakh, and K. I. Mogilnikova. 28 Sep 73, 17p
Trans. of Izvestiya Vysshikh Uchebnykh Zavedenii. Radiofizika (USSR) v7 n4 p585-595 1964.

Descriptors: (*Radio telescopes, Design), Antennas, Mirrors, Performance evaluation, Translations, USSR.

The report contains questions connected with the creation of large mirror radiotelescopes. The requirements for antennas of radiotelescopes in work with low-noise receivers are analyzed. It is shown that ordinary parabolic antennas are not optimal from the point of view of the set requirements. The advisability of using modified two- and three-mirror antennas is shown.

N-73-15837/GA PC$7.60/MF$1.45
California Inst. Of Tech., Pasadena.
QUANTITATIVE INVESTIGATION OF THE SOLAR MODULATION OF COSMIC-RAY PROTONS AND HELIUM NUCLEI.
T. L. Garrard. 19 Jun 72, 233p NASA-CR-130298

Descriptors: (*Protons, Primary cosmic radiation), (*Alpha particles, Primary cosmic radiation), (*Primary cosmic radiation, *Modulation), (*Solar activity, Modulation), Energy spectra, Gev range 01-10, Mev range, Solar wind.

For abstract, see NSA 28 04, number 08883.

N-73-16793/GA PC$5.45/MF$1.45
Lockheed Missiles and Space CO., Sunnyvale, Calif.
EXPERIMENTAL STUDY OF SPECTRAL AND SPATIAL DISTRIBUTION OF SOLAR X RAYS. FINAL REPORT.
L. W. Acton, R. C. Catura, and J. L. Culhane. 29 Sep 72, 74p NASA-CR-130359, LMSC/D-309802
Contract NASw-1834

Descriptors: (*X radiation, *Solar radiation), (*X-ray spectrometers, *Performance), (*Solar flares, X radiation), Distribution, Energy spectra, Radiation detectors, Solar corona.

For abstract, see NSA 28 04, number 09027.

N-73-16797/GA PC$4.00/MF$1.45
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
NUCLEAR GAMMA RAYS FROM SOLAR FLARES.
R. Ramaty, and R. E. Lingenfelter. Jan 73, 29p NASA-TM-X-66165, X-660-73-14

Descriptors: (*Gamma radiation, *Solar radiation), (*Protons, Solar radiation), (*Solar flares, *Energy), Emission, Energy spectra, Kev range 100-1000, Mev range 01-10, Sun.

For abstract, see NSA 28 04, number 09028.

N-73-16814/GA PC$4.00/MF$1.45
National Aeronautics and Space Administration, New York. Goddard Inst. For Space Studies.
STELLAR EVOLUTION OF HIGH MASS BASED ON THE LEDOUX CRITERION FOR CONVECTION.
R. Stothers, and C. Chin. 1972, 42p NASA-TM-X-68914

Descriptors: (*Star evolution, *Mass), (*Helium, *Abundance), (*Metals, Abundance), (*Carbon 12, *Alpha reactions), Alpha beams, Supergiant stars, Thermonuclear reactions.

For abstract, see NSA 28 04, number 08910.

N73-29824/2GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
ENERGY SPECTRA OF COSMIC GAMMA-RAY BURSTS.
T. L. Cline, U. D. Desai, R. W. Klebesadel, and I. B. Strong. Jul 73, 14p NASA-TM-X-70427, X-661-73-212
Subm-Submitted for Publication.

Descriptors: *Cosmic rays, *Energy spectra, *Gamma rays, *X rays, Bursts, Line spectra, Photon beams.

For abstract, see STAR 1120

N73-29825/9GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
APPROXIMATIONS FOR NEUTRON EMISSION SPECTRA FROM PROTON COLLISIONS BETWEEN 20 AND 500 MEV ON NUCLEI OF A GREATER THAN OR EQUAL TO 12.
M. O. Burrell. Aug 73, 34p NASA-TN-D-7386, M-455

Descriptors: *Construction materials, *Neutron emission, *Proton impact, *Spacecraft structures, Emission spectra, Radioactive materials, Secondary emission.

For abstract, see STAR 1120

N73-29840/8GA PC$3.00/MF$1.45
Translation Consultants, Ltd., Arlington, Va.
ASTROMETRY AND ASTROPHYSICS, NO. 9: RESEARCH OF THE SUN AND STARS.
V. I. Voroshilov. Jul 73, 199p NASA-TT-F-760
Contract NASW-2038
Tran-Transl. Into English from Astrometry Astrophys. (Kiev), No. 9, 1970 156 p.

Descriptors: *Astrophysics, *Solar atmosphere, *Stellar atmospheres, *Variable stars, Astrometry, Astronomical photometry, Fraunhofer lines, Quasars, Solar prominences, Spectral line width, Star clusters, Stellar evolution, Stellar luminosity.

For abstract, see STAR 1120

N73-29864/8GA PC$10.50/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
MARINER MARS 1971 TELEVISION PICTURE CATALOG: SEQUENCE DESIGN AND PICTURE COVERAGE, VOLUME 2, ADDENDUM 1.
P. E. Koskela. 1 Jul 73, 168p NASA-CR-133614, JPL-TM-33-585-VOL-2-ADD-1
Contract NAS7-100

Descriptors: *Mariner 9 space probe, *Mars (Planet), *Spaceborne photography, Mapping, Mars probes, Mars surface, Television systems.

For abstract, see STAR 1120

N73-29865/5GA PC$5.00/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
INTERPLANETARY CHARGED PARTICLE ENVIRONMENTS.
T. N. Divine. 1 Aug 73, 58p NASA-CR-133600, JPL-TM-33-637
Contract NAS7-100

Descriptors: *Cosmic rays, *Electrons, *Probability theory, *Protons, *Solar wind.

For abstract, see STAR 1120

N73-29866/3GA PC$11.00/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
EFFECTS OF TURBULENCE IN THE ATMOSPHERE OF VENUS ON PIONEER VENUS RADIO, PHASE 1.
R. Woo, W. Kendall, A. Ishimaru, and R. Berwin. 30 Jun 73, 178p JPL-TM-33-644
Contract NAS7-100

Descriptors: *Atmospheric turbulence, *Radio communication, *Venera satellites, *Venus atmosphere, *Venus probes, Atmospheric refraction, Mariner 5 space probe, Power spectra, Wave propagation.

For abstract, see STAR 1120

N73-29869/7GA PC$6.00/MF$1.45
Arizona Univ., Tucson. Field Emission and Space Systems Lab.
DETECTION TECHNIQUES FOR TENUOUS PLANETARY ATMOSPHERES.
Twentieth Six-Month Report, 1 Jan. - 30 Jun. 1973.
S. A. Hoenig, E. M. Bebee, E. M. Kumiega, C. W. Savitz, and E. Stolle. 30 Jun 73, 76p NASA-CR-133430, SAPR-20
Contract NGL-03-002-019

Descriptors: *Gas detectors, *Planetary atmospheres, Dust, Electric charge, Lungs.

For abstract, see STAR 1120

PB-224 135/4GA PC$3.00/MF$1.45
Chalmers Univ. of Technology, Goteborg (Sweden). Research Lab. of Electronics.
ON A TRANSIENT OH GROUND STATE SOURCE IN W75 B.
Research rept.,
J. Ellder. 1973, 12p RR-116

Descriptors: (*Radio sources(Astronomy), *Extraterrestrial radio waves), Radio astronomy, Sweden, Emission spectra, Ground state.
Identifiers: W 75B radio source, *Hydroxyl radical.

In June and July 1971 a transient OH source was observed in W75B at 1667 MHz (+ 27 km/s) with the 84-foot telescope of the Onsala Space Observatory. Further measurements on the different OH ground and excited states have been made during the years 1971 and 1972. No emissions, at velocities near 27 km/s, were detected at frequencies other than 1667 MHz. In April to August 1972, another transient emission was detected at 28.5 km/s and in December 1972 at 25.5 km/s in the 1667 MHz line of OH. As before, it only appeared when the right circular polarization filter was used. (Author)

PB-224 137/0GA PC$5.25/MF$1.45
Chalmers Univ. of Technology, Goteborg (Sweden). Research Lab. of Electronics.
RECOMBINATION LINE INVESTIGATION OF H II REGIONS AT HIGH PRINCIPAL QUANTUM NUMBERS.
Research rept.,
B. Torgny Cato. Aug 73, 65p RR-114

Descriptors: (*Radio sources(Astronomy), *Extraterrestrial radio waves), Radio astronomy, Line spectrum, Carbon, Hydrogen, Nebulae, Sweden.
Identifiers: W 3 radio source, NGC 2024 nebula, Orion A radio source, W 43 radio source, W 51 radio source, H 2 regions.

The 25.6 m (84-foot) radio telescope at Onsala Space Observatory has been used for investigations of hydrogen and carbon recombination lines at the 183 alpha and 230 beta transitions in five HII regions. The hydrogen transitions correspond to 1064.3071 MHz and 1067.0359 MHz, respectively. The equipment, data reduction, and the observational procedure are described and the spectra of the observed lines are shown. In addition to the data of the present observations previously published data of other transitions have been used in a study of the line broadening and the intensity as a function of the principal quantum number n. (Modified author abstract)

TRITA-EPP-73-5/GA PC$3.00/MF$1.45
Kungliga Tekniska Hogskolan, Stockholm (Sweden).
DOUBLE LAYERS AND TWO-STREAM INSTABILITY IN SOLAR FLARES.
P. Carlqvist. Feb 73, 20p
U.S. Sales Only.

Descriptors: (*Solar flares, *Two-stream instability), (*Hot plasma, Two-stream instability), (*Cold plasma, Two-stream instability), Electric conductivity, Electric discharges, Electric potential, Layers, Plasma sheath.

For abstract, see NSA 28 04, number 09029.

4. ATMOSPHERIC SCIENCES

4A. Atmospheric Physics

AD-767 819/6GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
CYCLOTRON RADIATION FROM ELECTRONS IN MAGNETOSPHERE,
R. P. Singh, and R. N. Singh. 17 Nov 69, 9p
AFCRL-TR-73-0453
Grant EOOAR-70-0070

Availability: Pub. in Jnl. of Scientific Research, v20 n1 p259-266 1960-70.

Descriptors: (*Magnetosphere, Cyclotron resonance phenomena), Electrons, Terrestrial magnetism, Power spectra, India.
Identifiers: Electron energy.

Cyclotron power radiated by an electron and total cyclotron power has been calculated and its variation along different geomagnetic lines of force has been shown. The polar diagram of the radiated cyclotron power has been worked out. In view of the direction of maximum power along the geomagnetic field, its interaction with the magnetospheric plasma has been discussed and has been argued that such interactions may play an important role in modifying the details of electromagnetic spectra. (Author)

AD-767 820/4GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
HIGHER ORDER HARMONIC RESONANCE OF ELECTRONS WITH ELECTROMAGNETIC WAVES PROPAGATING THROUGH MAGNETOPLASMA,
Omkar Nath, and R. N. Singh. 9 Nov 70, 7p
AFCRL-TR-73-0461
Grant EOOAR-70-0070
Availability: Pub. in Plasma Physics, v13 p1027-1032 1971.

Descriptors: (*Magnetosphere, Cyclotron resonance phenomena), Plasma oscillations, Electrons, Magnetohydrodynamics, Potential energy, India.

The effect of higher order cyclotron harmonic resonance of electrons with the propagating electromagnetic wave through the magnetoplasma is considered. It is shown that the synchronous energy gain for m = 1 and n = 1 becomes oscillatory at higher harmonics (m = 1, n = D). The expressions for the time period of energy oscillation and maximum energy gain during an oscillation are derived. The nature of pseudo-potential, maximum energy gain and the time period of energy oscillation are shown graphically. (Author)

AD-767 823/8GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
EFFECT OF COLLISIONS ON WAVE-PARTICLE RESONANCE-II,
OM Kar Nath, and R. N. Singh. 14 Aug 70, 11p
AFCRL-TR-73-0455
Grant EOOAR-70-0070
Availability: Pub. in International Jnl. Electronics, v30 n6 p551-569 1971.

Descriptors: (*Magnetosphere, Electrons), Equations of motion, Plasma physics, Resonance, India.
Identifiers: Electron energy.

Collisions are considered as a drag force in the equation of motion of electrons, and its effect on the wave-particle resonance is shown. Expressions for energy gain and time period of energy oscillations are derived. The role of collisions on the synchronous and oscillatory energy gain and on the time period of energy oscillation for magnetospheric plasma is shown. Energy gain is considerably affected, due to the presence of collisions. (Author)

AD-767 827/9GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
RESONANCE MECHANISM FOR ENERGIZATION OF ELECTRONS IN MAGNETOPLASMA. III.,
Omkar Nath, and R. N. Singh. 21 Sep 70, 8p
AFCRL-TR-73-0458
Grant EOOAR-70-0070
Availability: Pub. in International Jnl. of Electronics, v31 n3 p249-255 1971.

Descriptors: (*Magnetosphere, Plasma oscillations), Electrons, Cyclotron resonance phenomena, Potential energy, India.
Identifiers: Electron energy.

The well-known cyclotron resonance mechanism has been studied and energization of electrons in the magnetosphere has been explored. The relativistic variation of electron mass in the resonance process has been considered and the consequence of neglecting the relativistic electron mass variation has been discussed. At or near resonance the electron motion conforms with the motion of electrons in a potential well. Calculating the shape of the pseudo-potential for the magnetospheric plasma the energy gained by the electrons is calculated. It is seen that 1 ev electron resonating with the electromagnetic wave (omega = 10 million rad/sec rad sec-1 and E = 1/10 million e.s.u.) acquires 1 MeV energy after 1.88 sec. The geophysical effect of the proposed energization is discussed. (Author)

AD-767 828/7GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
PERIODIC ENERGIZATION OF ELECTRONS DUE TO RF WAVES PROPAGATING THROUGH THE MAGNETOSPHERE,
Omkar Nath, and R. N. Singh. 15 Mar 71, 4p
AFCRL-TR-73-0457
Grant EOOAR-70-0070
Presented at the convention organized by the Physical Research Committee of the CSIR at the Th.D.S.B. Government Coll., held at Naini Tal (India) in Apr 70. Revision of report dated 3 Sep 70.
Availability: Pub. in Indian Jnl. of Pure and Applied Physics, v9, p391-393 Jun 71.

Descriptors: (*Magnetosphere, Cyclotron resonance phenomena), Whistlers, Refractive index, Very low frequency, India, Whistlers, Radio waves, Interactions.
Identifiers: Electron energy.

The cyclotron resonant interaction of spiralling electrons with rf waves has been studied. Since in the rf range the refractive index of the magnetospheric plasma is non-unity, the synchronism between spiralling electrons and propagating electromagnetic waves is not established. It is found that the spiralling electrons are periodically accelerated and retarded. The maximum energy gained by spiralling electrons and the periodic time (time between two consecutive maxima and minima of energy) are found to depend upon the background plasma, the frequency of the propagating wave and the initial energy of interacting electrons. The maximum energy gained and the periodic time are found to increase steadily with the increasing wave frequency. For electrons with initial energy lesser than 0.5 MeV, the time period of energy oscillation decreases with the increase of initial energy of electron and for electrons of initial energy greater than 0.5 MeV, the periodic time increases with the increase of initial energy of electron. The maximum energy gain manifests some of the periodic phenomena associated with electron precipitation. (Author)

AD-767 829/5GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
VLF WAVE GENERATION BY THE CERENKOV PROCESS IN THE INNER MAGNETOSPHERE,
R. P. Singh, and R. N. Singh. 1970, 2p AFCRL-TR-73-0454
Grant EOOAR-70-0070
Availability: Pub. in Nature, v225 p49, 3 Jan 70.

Descriptors: (*Magnetosphere, Atmospherics), Cerenkov radiation, Very low frequency, Radiofrequency interference, India.
Identifiers: Hiss.

Electromagnetic waves of very low frequencies (VLF) are generated by a variety of natural processes. This letter is to offer support for the Cerenkov process, in which radiation is produced by the interaction of moving electrons with the ambient plasma. (Author)

AD-767 835/2GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
IMPACT AND BREMSSTRAHLUNG PHOTOIONIZATION DUE TO PRECIPITATING ELECTRONS IN THE LOWER IONOSPHERE,
R. Y. Prasad, and R. N. Singh. 1972, 15p AFCRL-TR-73-0469
Grant EOOAR-70-0070
Availability: Pub. in Anneles de Geophysique, v28 n3 p593-605 1972.

Descriptors: (*Ionosphere, Electrons), Ionization, Bremsstrahlung, Photochemistry, Pair production, Power spectra, India.
Identifiers: E region, F region, D region, Electron energy, Electron ion interactions, Electron impact spectra, Photoionization.

The attenuation of precipitating electrons of energy 4<E<100 KeV in the lower ionosphere has been computed. The computed results are used to study the impact and bremsstrahlung photoionization in the lower ionosphere. It is seen that maximum impact ionization produced by the precipitating electrons of energy 4, 40 and 100 KeV occurs at 109, 86 and 79 km and maximum bremsstrahlung photoionization occurs just below these heights namely 100, 72 and 65 km respectively. It is concluded that impact ionization is an important source of ionization in the E-and lower F-regions, whereas bremsstrahlung photoionization is an important source of ionization in the D-region. The effect of energy spectra of precipitating electrons on the rate of electron-ion pair production has been discussed. (Author)

AD-767 840/2GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
EFFECT OF ENERGY SPECTRA ON SYNCHROTRON RADIATION FROM THE MAGNETOSPHERE,
R. P. Singh, K. D. Misra, and R. N. Singh. 10 Aug 70, 7p AFCRL-TR-73-0465
Grant EOOAR-70-0070
Availability: Pub. in Jnl. of Atmospheric and Terrestrial Physics, v33 p825-830 1971.

Descriptors: (*Magnetosphere, Electrons), Power spectra, India.
Identifiers: Synchrotron radiation, Electron energy.

The effect of the power spectrum of energetic electrons on the synchrotron radiation has been studied. The authors have calculated the synchrotron power for four different energy spectra of radiating electrons. The radiated synchrotron power is found to change with the energy spectrum of the radiating electrons. The calculated synchrotron power is compared with available experimental results. It is concluded that the measured synchrotron power is capable of giving the nature of the energy spectra of radiating electrons. (Author)

AD-767 842/8GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
EFFECT OF ELECTRON COLLISIONS ON CERENKOV RADIATION FROM MAGNETOPLASMA,
P. K. Shukla, R. P. Singh, and R. N. Singh. 27 Jan 70, 6p AFCRL-TR-73-0463
Grant EOOAR-70-0070
Availability: Pub. in International Jnl. Electronics, v28 n5 p421-425 1970.

Descriptors: (*Magnetosphere, Cerenkov radiation), Electrons, Electromagnetic waves, Interactions, India.

The theory of Cerenkov radiation from magnetoplasma was modified to account for the effect of electron collision frequency. The results are compared with the Cerenkov theory for collisionless magnetoplasma. The Cerenkov radiation in the magnetosphere is unaffected by electron collisions. In the ionosphere the radiated power is found to change by several times as compared to radiation by collisionless magnetoplasma. (Author)

AD-767 843/6GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
TRAVELLING WAVE TUBE AMPLIFICATION OF HYDROMAGNETIC WHISTLERS IN THE MAGNETOSPHERE,
Omkar Nath, R. Y. Prasad, and R. N. Singh. 1970, 5p AFCRL-TR-73-0462
Grant EOOAR-70-0070
Availability: Pub. in Indian Jnl. of Pure and Applied Physics, v9 p586-589 Aug 71.

Descriptors: (*Magnetosphere, Whistlers), (*Whistlers, Magnetohydrodynamics), Very low frequency, Extremely low frequency, Travelling-wave tubes, Electromagnetic fields, Charged particles, Dispersion relations, Cyclotron resonance phenomena, India.

The amplification of hydromagnetic whistlers in the magnetosphere by travelling wave tube mechanism has been considered. Expressions for the temporal growth rate and the subsequent amplification of the wave propagating at an arbitrary angle with the geomagnetic lines of force have been derived in terms of two-component ambient plasma and one-component streaming plasma. It is concluded that the temporal growth rate increases with streaming charged particle density, polar angle, frequency of the wave and McIlwain parameter, and decreases with the increase of latitude. (Author)

AD-767 988/9GA PC$3.25/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
CHARGED PARTICLES IN THE EARTH'S LOWER ATMOSPHERE,
E. G. Shvidkovskii, Yu. A. Bragin, and O. K. Kostko. 6 Sep 73, 25p Rept no. FTD-HT-23-663-73
Edited trans. of Tsentralnaya Aerologicheskaya Observatoriya. Trudy (USSR) n100 p22-35 1970, by Michael Seidel.

Descriptors: (*Atmosphere, Charged particles), Low altitude, Ions, Diurnal variations, USSR.
Identifiers: Translations.

The results of experimental and theoretical studies of the ion structure of the lower atmosphere are generalized and several deliberations concerning the direction of further work in this area are expressed.

AD-767 989/7GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
CROSS-DYNAMICS OF TROPOPAUSE AND OZONOPAUSE HEIGHTS,
G. F. Ivanova. 29 Aug 73, 18p Rept no. FTD-HT-23-756-73
Edited trans. of Glavnaya Geofizicheskaya Observatoriya, Leningrad. Trudy (USSR) n279 p185-193 1972, by Paul J. Reiff.

Descriptors: (*Tropopause, Height finding), (*Upper atmosphere, Ozone), Diurnal variations, Statistical analysis, USSR.
Identifiers: Translations.

The author concludes that the ozonopause is closely linked with the tropopause, as proved by the high correlation coefficients existing between their heights.

AD-767 990/5GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
EXPERIMENTAL METHOD OF STUDYING ATMOSPHERIC AEROSOLS,
L. S. Ivlev, and V. I. Dmokhovskii. 6 Sep 73, 18p Rept no. FTD-HT-23-807-73
Edited trans. of Problemy Fiziki Atmosfery (USSR) n9 p28-38 1971, by Louise E. Heenan.

Descriptors: (*Aerosols, Light transmission), Lasers, Fog, Ice fog, Smokes, Microscopes, USSR.
Identifiers: Light scattering, Nephelometers, Holography, Translations.

The advantages of laser sources have enabled us to create a number of new, comparatively uncomplicated, effectively operating instruments for studying atmospheric aerosols, as well as to improve the characteristics of some of the existing instruments. The methods are laser sounding, methods of small scattering angles, ultra-microscopic and photoelectric counters and holography.

AD-768 003/6GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
UNIFICATION OF PERIODIC FLUCTUATIONS IN HIGH LATITUDE GEOPHYSICAL PHENOMENA,
R. Y. Prasad, Omkar Nath, and R. N. Singh. 15 Jul 70, 8p AFCRL-TR-73-0472
Grant EOOAR-70-0070
Revision of report dated 1 Apr 70.
Availability: Pub. in the Earth and Planetary Science Letters, v10 p430-434 1971.

Descriptors: (*Ionospheric disturbances, Plasma oscillations), Electron density, Magnetohydrodynamics, India.
Identifiers: Electron energy, Particle flux.

The oscillatory nature of wave-particle interaction is proposed to be the source of non-local fluctuations in the electron energy. The energized electron flux when precipitated in the lower ionosphere gives rise to various geophysical phenomena. The time scale of energy oscillation is estimated and its validity is discussed with reference to observed time scales of various geophysical phenomena. (Author)

AD-768 008/5GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
PROPAGATION OF HYDROMAGNETIC WAVES IN A PARTIALLY IONIZED MAGNETOPLASMA,
Omkar Nath, R. Y. Prasad, and R. N. Singh. 9 Aug 71, 5p AFCRL-TR-73-0477
Grant EOOAR-70-0070
Availability: Pub. in Indian Jnl. of Pure and Applied Physics, v9 p561-563 Aug 71.

Descriptors: (*Magnetosphere, Dispersion relations), Magnetohydrodynamics, Equations of motion, Refractive index.
Identifiers: Maxwells equations.

The dispersion relation for hydromagnetic waves propagating at an arbitrary angle through a partially ionized magnetoplasma has been derived. The propagation characteristics have been discussed for the longitudinal, transverse and off wave propagation. The effects of collision frequencies on the wave propagation are discussed. The analysis has been extended to study the propagation of left and right hand circularly polarized hydromagnetic waves through the magnetospheric plasma. It is concluded that near ion-gyrofrequency, the left hand wave resonates with the ions and plays an important role in the propagation. (Author)

AD-768 358/4GA PC$3.75/MF$1.45
California Univ Riverside Inst of Geophysics and Planetary Physics
TIME CORRELATION OF HEAVY COSMIC RAY NUCLEI.
Technical rept.,
Starnes Elbert Walker. Sep 73, 99p Rept nos. IGPP-UCR-42, TR-12
Contract N00014-69-A-0200-5004, Grant NGR-05-008-002

Descriptors: (*Cosmic rays, Measurement), Protons, Alpha particles, Correlation techniques, Radio telescopes, Scintillation counters, Pulse height analyzers, Thermonuclear reactions.
Identifiers: Galactic cosmic rays.

The time variation of heavy cosmic ray nuclei over a 4.5 hour period has been investigated. The results were obtained from a balloon flight from Ft. Churchill, Manitoba, 73 degrees North geomagnetic latitude, on July 22, 1972. Identifying the charge and kinetic energy/nucleon of incident, heavy cosmic ray nuclei by four simultaneous dE/dx measurements and an active time of flight measurement, a detector was lifted by balloon to the top of the atmosphere where only 0.4% of residual atmosphere remained. During the 19 hours at float altitude, a continuous 4.5 hours were allocated to the heavy nuclei experiment. The magnitude of the galactic, heavy nuclei flux is perturbed during solar activity. With the high event rate capability of the particle spectrometer, the results of the time correlation showed no statistically significant evidence of small pertubations from the average intensity for the incident heavy nuclei with kinetic energies > 350 MeV/nucleon over the 4.5 hour exposure period. Minimal solar activity from July 17 through July 23 of 1972 supports this result. In addition, no evidence of a direct diurnal anisotropy consistent with the corotation of galactic heavy nuclei with the solar magnetic field was observed. (Modified author abstract)

COM-73-11514/9GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Aeronomy Lab.
ELECTRIC FIELDS IN THE EQUATORIAL IONOSPHERE: A REVIEW OF TECHNIQUES AND MEASUREMENTS,
B. B. Balsley. 1973, 11p NOAA-73080908
Pub. in Jnl. of Atmospheric and Terrestrial Physics, v35 p1035-1044 1973.

Descriptors: (*Ionosphere, Electric fields), E region, F region, Equatorial electrojet, Upper atmosphere.

The paper reviews the techniques and experimental results of measurements of ionospheric drifts and electric fields in the region of the magnetic dip equator. Various techniques are discussed and the results are compared with existing theoretical electric field models. (Author)

COM-73-11547/9GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Space Environment Lab.
SEASONAL MOVEMENT OF THE SQ CURRENT FOCI AND RELATED EFFECTS IN THE EQUATORIAL ELECTROJET,
J. D. Tarpley. 1 Jan 73, 10p NOAA-73071721
Pub. in Jnl. of Atmospheric and Terrestrial Physics, v35 p1063-1071 1973.

Descriptors: (*Equatorial electrojet, Seasonal variations), Geomagnetism, Power spectra.

Geomagnetic observations from the western Pacific and Africa were used to determine the latitude of the focus of the Sq current system. The focus usually lies near 35N over the western Pacific in February through July. During the autumnal equinox the northern focus shifts southward (equatorward) to around 27 degrees latitude and then swings northward to 40 to 45 degrees N in November and December. The movement of the southern hemisphere focus is complementary, that is, the equatorward shift occurs at

the March eqinox and the poleward movement during the June solstice. The seasonal movements of the Sq foci suggest an explanation for the semi-annual variation in the electrojet amplitude. The equatorward movement of one focus at each equinox will cause an equinoctial enhancement of the electrojet. The poleward shift of the northern focus in December and the southern focus in June account for the solstitial weakening of the electrojet. (Author)

COM-73-11548/7GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Space Environment Lab.
RESEARCH ON GEOMAGNETIC PULSATIONS FROM JANUARY 1969 TO JULY 1972--A REVIEW,
W. H. Campbell. 1 Jan 73, 12p NOAA-73071720
Pub. in Jnl. of Atmospheric and Terrestrial Physics, v35 p1147-1157 1973.

Descriptors: (*Geomagnetic micropulsations, *Bibliographies), Aeronomy, Magnetosphere, Magnetic fields, Magnetohydrodynamic waves, Scientific satellites, Auroras, Aerospace environment.

This brief review of geomagnetic micropulsation research is intended to cover the scientific publications from the period of January 1969 through July 1972. The extensive bibliography has been organized into subsets of theoretical and observational groupings with some separation by the usual Fc and Pi classifications. Note is given to especially commendable papers. (Author)

COM-73-11554/5GA Reprint
Cooperative Inst. for Research in Environmental Science, Boulder, Colo.
A THEORETICAL STUDY OF LUNAR VARIATIONS IN FOF2 AT LOW LATITUDE,
D. N. Anderson, S. Matsushita, and J. D. Tarpley. 24 Jul 72, 8p NOAA-73062217
Pub. in Jnl. of Atmospheric and Terrestrial Physics, v35 p753-759 1973.

Descriptors: (*F 2 region, Electron density(Concentration)), Ionospheric disturbances, Atmospheric tides, Continuity equation.

The authors explain the lunar oscillations in low latitude F 2-region electron density (measured in terms of critical frequency) by solving the electron continuity equation, taking into account production, loss, and transport due to neutral winds, diffusion and electric fields. The lunar effect is separated by solving the continuity equation both with and without a perturbing lunar electrostatic field and differencing the two solutions to isolate the lunar oscillations. The fountain effect is also discussed.

COM-73-11558/6GA Reprint
National Oceanic and Atomospheric Administration, Boulder, Colo. Environmental Research Labs.
APPLICATION OF BACKUS-GILBERT INVERSION TECHNIQUE TO DETERMINATION OF AEROSOL SIZE DISTRIBUTIONS FROM OPTICAL SCATTERING MEASUREMENTS,
E. R. Weatwater, and A. Cohen. 26 Dec 72, 10p NOAA-73080929
Pub. in Applied Optics, v12 n6 p1340-1348 Jun 73.

Descriptors: (*Aerosols, Particle size distribution), (*Air pollution, Optical measurement), Light scattering, Computerized simulation.

The inversion technique of Backus and Gilbert is applied to the determination of size distributions of spherical particles from optical scattering measurements. The spatial resolution inherent in a set of multiwavelength measurements is studied as a function of number of measurements, measurement noise level, and radius. The inversion technique is then applied to computer simulated intensity data to recover aize distributions. These examples indicate that the distribution can be recovered at selected points without using a priori assumptions about the shape of the distribution. (Author)

COM-73-11560/2GA Reprint
National Oceanic and Atomospheric Adiministration, Hilo, Hawaii. Mauna Loa Observatory.
DISPERSION INTO THE HIGHER ATMOSPHERE OF EFFLUENTS DURING AN ERUPTION OF KILAUEA VOLCANO,
R. F. Pueschel, and B. G. Mendonca. 1972, 9p NOAA-73080924
Summary in French.
Pub. in Jnl. de Recherches Atomospheriques, v6 nl,2,3 p439-446 Jan-Sep 72.

Descriptors: (*Volcanic ejecta, *Air pollution) Atmospheric composition, Aerosols, Synoptic meteorology, Weather modification, Temperature inversions, Hawaii.

A brief but significant eruption on August 14, 1971 at Kilauea Volcano, Hawaii, ejected volcanic effluents aloft. The plume reached an estimated height of three kilometers. Measurements at Mauna Loa Observatory at 35 km distance and 3.4 km elevation showed high aerosol concentration and low visibilities during the period of active fountaining. The energy released during this time resulting from radiation, sensible heat transfer, momentum transfer and latent heat of condensation was intense enough to cause a break in the prevailing trade wind inversion. At the termination of fountaining, thermal radiation and heavy fuming continued at the vents for several hours and days, respectively, but the effluents were continuously unable to penetrate the temperature inversion. (Author)

COM-73-11561/0GA Reprint
National Oceanic and Atmospheric Administration, Hilo, Hawaii. Mauna Loa Observatory.
THE PROPORTION OF VOLATILE AEROSOLS ON THE ISLAND OF HAWAII,
R. F. Pueschel, B. A. Bodhaine, and B. G. Mendonca. 20 Nov 72, 9p NOAA-73080925
Revision of report dated 9 Aug. 72.
Pub. in Jnl. of Applied Meterology, v12 n2 p308-315 Mar 73.

Descriptors: (*Aerosols, Hawaii), (*Air pollution, *Hawaii), Air masses, Volcanic ejecta, Ammonium sulfate, Temperature inversions, Light scattering.
Identifiers: Hilo(Hawaii).

Nephelometry, in conjunction with a tube furnace and an Aitken nuclei counter, has been applied to the investigation of the volatile component of the aerosol budget at Cape Kumukahi, Hilo, and Mauna Loa Observatory, Hawaii. It was found that heating of the incoming air sample resulted in a decrease in light scattering above 100C due to the loss of organics and other easily volatilized compounds, and a drastic increase in Aitken nuclei counts at temperatures above 150C in the presence of ammonium sulfate. In the marine aerosol, a decrease in light scattering at about 45C was observed which is probably due to the loss of moisture during the phase transition from droplet to crystal. A second decrease near 120C is probably caused by the volatilization of organics from the oceanic aerosol. In heating to 150C, the amount of light-scattering decrease was found to depend on the air mass. On occasions when volcanic effluent was apparently present, an increase in Aitken nuclei was noted in the heated air. (Modified author abstract)

COM-73-11562/8GA Reprint
National Oceanic and Atmospheric Administration, Hilo, Hawaii. Mauna Loa Observatory.
ICE NUCLEI, TOTAL AEROSOL, AND CLIMATOLOGY AT MAUNA LOA, HAWAII,
B. G. Mendonca, and R. F. Pueschel. 18 Oct 72, 7p NOAA-73080927
Revision of report dated 11 Aug 72.
Pub. in Jnl. of Applied Meteorology, v12 n1 p156-160 Feb 73.

Descriptors: (*Aerosols, Hawaii), (*Climatology, *Hawaii), Ice formation, Air pollution, Light scattering.
Identifiers: Hilo(Hawaii).

The simultaneous operation of two NCAR ice nuclei counters and in integrating nephelometer at Mauna Loa Observatory over a period of 9 months shows concentration changes in the ice nuclei population that vary in direct relation to the atmospheric light scattering coefficient. Furthermore, both of these atmospheric parameters are strongly correlated with local climatology: (1) lowest values of ice nuclei concentrations and Rayleigh scattering exist when subsiding air or a strong temperature inversion prevents the advection of sub-inversion air to the monitoring site; (2) an increased frequency of higher ice nuclei counts and increased light scattering over a period of several hours are found when mesoscale atmospheric mixing occurs; and (3) the highest number of ice nuclei and maximum light scatter are encountered when a thermally induced air flow advects sub-inversion air to the Observatory site. These finding suggest the absence of extraterrestrial sources for light scattering and ice nucleating material, and point toward the existence of sources for both on Hawaii. (Author)

COM-73-11563/6GA Reprint
National Oceanic and Atmospheric Administration, Hilo, Hawaii. Mauna Loa Observatory.
SOURCES OF ATMOSPHERIC PARTICULATE MATTER ON HAWAII,
R. F. Pueschel, and B. G. Mendonca. 24 Sep 71, 12p NOAA-73080923
Summary in Russian.
Pub. in Tellus, v24 n2 p139-149 1972.

Descriptors: (*Aerosols, *Hawaii), (*Air pollution, Hawaii) Sources, Aerosols, Volcanic ejecta, Atmospheric composition, Air masses, Temperature inversions, Visibility, Light scattering.

Sources and advection of atmospheric particulate matter on the Island of Hawaii were assessed to properly evaluate the benchmark qualities of the air at the Mauna Loa Geophysical Observatory. A manually operated Gardner counter, a continually recording Aitken counter and a nephelometer were used to measure diurnal and long term trends of concentrations and light scattering coefficients of atmospheric particulate. Significant sources of aerosol particles result from combustion activities on the island, both man-made and volcanic. Volcanic effluent can penetrate the tradewind inversion when conditions are right and show up on long term Aitken counts at the Mauna Loa Observatory. The relative contribution of marine aerosols to the total particle population in the air masses over the island is small. The difference in concentration and the light scattering coefficient of particles in the air masses above and below the tradewind inversion are in the order of one magnitude or more. (Author)

COM-73-11575/0GA Reprint
National Oceanic and Atmospheric Administration, Hilo, Hawaii. Mauna Loa Observatory.
FLAME PHOTOMETRIC ANALYSIS OF THE TRANSPORT OF SEA SALT PARTICLES,
Barry A. Bodhaine, and Rudolf F. Pueschel. 11 Apr 72, 11p NOAA-73080926
Revision of report dated 29 Feb. 72.
Pub. in Jnl. of Geophysical Research, v77 n27 p5106-5115, 20 Sep 72.

Descriptors: (*Aerosols, Hawaii), (*Particle size distribution, Flame photometry), (*Sodium

chloride, *Marine atmospheres), (*Flame photometry, Aerosols), Oceans, Condensates, Wind (Meteorology).

The method of flame scintillation spectral analysis has been adopted for the determination of the size distribution of sodium-containing particles. Near the seashore, these aerosols are identical to sea salt particles, amount to approximately five percent of the total Aitken particle count, and exhibit a power law distribution with Beta = 3.8. Measurements made at Mauna Loa Observatory (above the trade wind inversion) indicate a similar size distribution. However, only about one percent of the concentration is transported through the inversion, and removal efficiency tends to favor the removal of larger particles. (Author)

COM-73-11597/4GA Reprint
Banaras Hindu Univ., Varanasi (India).
LOW DISPERSION WHISTLERS OBSERVED SIMULTANEOUSLY AT TWO LOW LATITUDE STATIONS,
Birbal singh, S. N. Mishra, and B. A. P. Tantry. 15 Jul 72, 12p NOAA-73071203
Contract NOAA-E33-70(N)
Revision of report dated 15 Jul 72.
Pub. in Jnl. of Geomagnetism and Geoelectricity, v24 p277-287 1972.

Descriptors: (*Whistlers, Ray Tracing), Ionospheric propagation, Very low frequencies, Lightning.

Employing the Haselgrove ray tracing equations and a diffusive equilibrium model of the ionosphere, the propagation characteristics of low dispersion whistlers observed simultaneously at low-latitude ground stations Gulmarg (geomag. lat. 24 degrees 10 min N) and Naini Tal (geomag. lat. 19 degrees 1 min N), are discussed. It is shown that these whistlers are caused by the VLF waves which were radiated from the return stroke of a lightning discharge, penetrated the ionosphere at two different entry points, propagated to the opposite hemisphere in the whistler mode and received at 19 degrees and 24 degrees geomagnetic latitudes. The lower and higher cut-off frequencies are explaned in terms of their deviating away from the bunch of the recorded whistler waves. (Author)

COM-73-11622/0GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Aeronomy Lab.
VHF DOPPLER SPECTRA OF RADAR ECHOES ASSOCIATED WITH A VISUAL AURORAL FORM: OBSERVATIONS AND IMPLICATIONS,
B. B. Balsley, W. L. Ecklund, and R. A. Greenwald. 6 Dec 72, 8p NOAA-73071206
Revision of report dated 8 Sep 72.
Pub. in Jnl. of Geophysical Research, v78 n10 p1681-1687, 1 Apr 73.

Descriptors: (*Auroras, Radar echoes), Doppler radar, Very high frequencies.

Detailed analysis of a relatively uncomplicated premidnight auroral event shows that there can be a close correspondence between visual auroral and radar auroral forms. The radar echoes are not exactly spatially coincident with the visual form, but they occur near the equatorward edge. High-resolution Doppler radar data are consistent with the picture of a horizontal current flowing near the equatorward edge of the form. There is some evidence that the two-stream instability is a causal mechanism for producing some of the radar auroral irregularities; there is additional evidence indicating that the gradient drift mechanism may also play a major role. (Author)

COM-73-11635/2GA PC$2.75/MF$1.45
National Oceanic and Atmospheric Administration, Boulder, Colo. Aeronomy Lab.
PITCH ANGLE DIFFUSION IN THE MAGNETOSPHERE,
Technical memo.,
Thomas E. Holzer, and Tetsuya Sato. Aug 73, 10p NOAA-73090405, NOAA-TM-ERL-AL-7

Descriptors: (*Magnetosphere, Diffusion coefficient), Electrons, Electric fields.

Certain difficulties in the derivation of simple quasilinear diffusion coefficients describing pitch angle diffusion by electrostatic waves are pointed out. It is shown that approximating the correlation time by the wave period can lead to two orders of magnitude errors in the diffusion coefficient. Formulas for the quasilinear diffusion coefficient in certain limiting cases are derived. (Author)

HASL-275/GA PC$4.00/MF$1.45
Health and Safety Lab. (Aec), New York.
LUIN, A CODE FOR THE CALCULATION OF COSMIC RAY PROPAGATION IN THE ATMOSPHERE.
K. O'Brien. May 73, 23p

Descriptors: (*Earth atmosphere, *Cosmic ray flux), (*Computer codes, *L codes), Cosmic radiation, Geomagnetic field, Ionization, Modulation, Spectra, Temperature dependence.

For abstract, see NSA 28 04, number 08882.

LA-UR-73-677/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
STRIATION OF THE ION CLOUD PRODUCED IN THE OOSIK EXPERIMENT.
P. J. Bottoms, and M. S. Tierney. 2 May 73, 13p CONF-730442-1
Contract W-7405-eng-36

Descriptors: (*Geomagnetic field, *Geomagnetic conjugacy), (*Ionosphere, *Barium ions), Motion, Rockets.

For abstract, see NSA 28 06, number 13548.

LA-UR-73-708/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
COMPARISON OF LOCKHEED AND AFWL BASED ABSORPTION COEFFICIENTS FOR AIR.
A. N. Cox, and J. E. Tabor. 15p CONF-730442-3

Descriptors: (*Atmospheric explosions, *Absorption), Air, Cross sections, Scattering, Ultrahigh temperature.

For abstract, see NSA 28 05, number 11589.

LA-UR-73-732/GA PC$3.50/MF$1.45
Los Alamos Scientific Lab., N. Mex.
MAGNETOSPHERIC PLASMA FLOW AND THE NATURE OF THE MAGNETOSPHERIC BOUNDARY LAYER.
E. W. Jr. Hones. 28p CONF-730539-1

Descriptors: (*Magnetosphere, *Plasma), (*Magnetotail, *Boundary conditions), (*Magnetosphere, Boundary conditions), Distance, Protons, Velocity.

For abstract, see NSA 28 05, number 11598.

N-71-12774/GA PC$5.45/MF$1.45
California Univ., San Diego, la Jolla (Usa). Space Physics Group.
PLASMA CLOUDS IN THE MAGNETOSPHERE.
S. E. De Forest, and C. E. McIlwain. Sep 70, 56p

Descriptors: (*Magnetosphere, *Plasma), Magnetic bays, Magnetic storms.

For abstract, see NSA 28 05, number 11599.

N-72-29277/GA PC$4.00/MF$1.45
Trw Systems Group, Redondo Beach, Calif. (Usa). Space Sciences Dept.
ELECTROSTATIC INSTABILITY OF RING CURRENT PROTONS BEYOND THE PLASMAPAUSE DURING INJECTION EVENTS.
F. V. Coroniti, R. W. Fredricks, and R. White. 1 May 72, 12p NASA-CR-127756, TRW-22945-6001
Contract NASw-2357

Descriptors: (*Ring currents, *Instability), (*Protons, Ring currents), Excitation, Geomagnetic field, Injection, Losses, Plasmapause, Wave propagation.

For abstract, see NSA 28 05, number 11600.

N-73-14743/GA PC$4.00/MF$1.45
Stanford Univ., Calif. Inst. For Plasma Research.
THEORETICAL AND EXPERIMENTAL STUDIES OF THE NATURE AND CHARACTERISTICS OF SPACE RELATED PLASMA RESONANCE PHENOMENA. SEMIANNUAL REPORT, 1 JANUARY--30 JUNE 1972.
F. W. Crawford. Sep 72, 30p NASA-CR-129915, SU-IPR-492

Descriptors: (*Plasma, *Instability), (*Whistlers, Instability), (*Magnetosphere, *Wave propagation), Emission, Resonance.

For abstract, see NSA 28 04, number 09174.

N-73-14807/GA PC$4.00/MF$1.45
Massachusetts Inst. Of Tech., Cambridge. Center for Space Research.
MIT SOLAR WIND PLASMA DATA FROM EXPLORER 33 AND EXPLORER 35: JULY 1966 TO SEPTEMBER 1970.
H. Howe, J. Binsang, C. Wang, and E. Clapp. Dec 71, 40p NASA-CR-129923, CSR-TR-71-4
Contract NAS5-9078

Descriptors: (*Solar wind, *Plasma), Data, Explorer satellites.

For abstract, see NSA 28 04, number 09026.

N-73-16340/GA PC$4.00/MF$1.45
California Univ., Los Angeles. Plasma Physics Group.
CONVECTIVE AMPLIFICATION OF TYPE 1 IRREGULARITIES IN THE EQUATORIAL ELECTROJET.
K. Lee, and C. F. Kennel. Nov 72, 41p NASA-CR-130382, PPG-136
Contract N00014-69-A-0200-4023

Descriptors: (*Electrojets, *Electron density), Convection, Daily variations, Geomagnetic equator, Wave propagation.

For abstract, see NSA 28 04, number 09155.

N-73-16342/GA PC$7.60/MF$1.45
Stanford Univ., Calif. Inst. For Plasma Research.
LINEAR AND NONLINEAR STABILITY CHARACTERISTICS OF WHISTLERS.
A. L. Brinca. Oct 72, 176p NASA-CR-130349, SU-IPR-489

Descriptors: (*Whistlers, *Stability), Geomagnetic field, Plasma waves, Polarization, Wave propagation.

For abstract, see NSA 28 04, number 09175.

N-73-16344/GA PC$7.60/MF$1.45
Stanford Univ., Calif. Radioscience Lab.
STRUCTURE OF THE MAGNETOSPHERE AS DEDUCED FROM MAGNETOSPHERICALLY REFLECTED WHISTLERS.
B. C. Edgar. Mar 72, 195p NASA-CR-130352, SU-TR-3438-2
Contract NAS5-2131

Descriptors: (*Magnetosphere, *Shape), (*Whistlers, *Reflection), Electron density, Electron density, Khz range 01-100, Lightning.

For abstract, see NSA 28 04, number 09176.

N-73-16345/GA PC$5.45/MF$1.45
Stanford Univ., Calif. Radioscience Lab.
METHODS OF DETERMINING ELECTRON CONCENTRATIONS IN THE MAGNETOSPHERE FROM NOSE WHISTLERS.
C. G. Park. Jan 72, 113p NASA-CR-130353, SU-TR-3454-1

Descriptors: (*Magnetosphere, *Electron density), (*Whistlers, *Wave propagation), Geomagnetic field, Ionosphere.

For abstract, see NSA 28 04, number 09177.

N-73-16832/GA PC$4.00/MF$1.45
Iowa Univ., Iowa City. Dept. Of Physics and Astronomy.
MAGNETOSPHERIC ELECTRON DENSITY MEASUREMENTS FROM UPPER HYBRID RESONANCE NOISE OBSERVED BY IMP-6.
R. R. Shaw, and D. A. Gurnett. Dec 72, 45p
NASA-CR-130273
Contract NAS5-11074

Descriptors: (*Magnetosphere, *Electron density), Electrons, Frequency range, Plasmapause, Radio noise.

For abstract, see NSA 28 04, number 09178.

N73-29390/4GA PC$3.00/MF$1.45
Finnish Meteorological Inst., Helsinki.
LIGHTNING FLASH COUNTER MEASUREMENTS IN FINLAND DURING 1972.
L. Laitinen. 1973, 19p REPT-43, ISBN-951-697-013-3
In Finnish and English.

Descriptors: *Counters, *Finland, *Lightning, Light (Visible radiation), Meteorological parameters, Tables (Data), Thunderstorms.

For abstract, see STAR 1120

N73-29391/2GA PC$10.00/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
THERMOSPHERIC WIND EFFECTS ON THE GLOBAL DISTRIBUTION OF HELIUM IN THE EARTH'S UPPER ATMOSPHERE.
Ph.D. Thesis - Michigan Univ., Ann Arbor.
C. A. Reber. Jul 73, 156p NASA-TM-X-70441, X-621-73-223
Misc-Supersedes X-621-71-480.

Descriptors: *Helium, *Thermosphere, *Upper atmosphere, *Wind (Meteorology), Argon, Daytime, Night, Seasons.

For abstract, see STAR 1120

N73-29392/0GA PC$4.25/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
HIGH-LATITUDE DAYSIDE ELECTRIC FIELD AND PARTICLE MEASUREMENTS.
N. C. Maynard, and A. D. Johnstone. Aug 73, 44p
NASA-TM-X-70450, X-645-73-243

Descriptors: *Electric fields, *Particles, *Sounding rockets, Daytime, Electrons, Polar caps.

For abstract, see STAR 1120

N73-29393/8GA PC$4.50/MF$1.45
Texas A&M Univ., College Station. Dept. of Physics.
THE INFLUENCE OF OZONE AND AEROSOLS ON THE BRIGHTNESS AND COLOR OF THE TWILIGHT ZONE.
C. N. Adams, G. N. Plass, and G. W. Kattawar. 15 Jul 73, 46p NASA-CR-133739, REPT-7
Contract NGR-44-001-117

Descriptors: *Atmospheric models, *Twilight glow, Aerosols, Color, Ozone, Radiance.

For abstract, see STAR 1120

ORNL-TM-3877/GA PC$4.25/MF$1.45
Oak Ridge National Lab., Tenn.
MEASUREMENT OF THE NEUTRON ENERGY SPECTRUM AT 9 G/CM EXP 2 RESIDUAL ATMOSPHERE.
W. Zobel, T. A. Love, J. T. DeLorenzo, C. O. McNew, and R. H. Baldry. Jun 73, 43p
Contract W-7405-eng-26

Descriptors: (*Neutrons, Cosmic radiation), (*Cosmic radiation, *Energy spectra), Earth atmosphere, Levels, Mev range 01-10, Mev range 10-100, Solar cycle.

For abstract, see NSA 28 04, number 08884.

PB-224 203/0GA PC$7.75/MF$1.45
Systems Applications, Inc., Beverly Hills, Calif.
EXISTING NEEDS IN THE EXPERIMENTAL AND OBSERVATIONAL STUDY OF ATMOSPHERIC CHEMICAL REACTIONS.
Interim rept.,
John H. Seinfeld, Thomas A. Hecht, and Philip M.Roth. Jun 73, 357p* R73-21 EPA-R4-73-031
Contract EPA-68-02-0580

Descriptors: (*Atmospheric models, Chemical reactions), (*Air pollution, Reaction kinetics), Models, Nitrogen oxides, Reaction kinetics, Photochemistry, Computerized simulation, Smog, Recommendations, Lower atmosphere, Hydrocarbons, Sulfur oxides, Contaminants.
Identifiers: Chemical reaction mechanisms, Air quality data.

This report contains recommendations to aid those concerned with photochemical modeling in planning studies. The suggested programs are designed to provide information needed to develop kinetic models to describe the chemical transformations of atmospheric pollutants. The core of this report focuses on kinetic and mechanistic studies of individual reactions, smog chamber studies, and atmospheric measurement programs that the authors feel should be undertaken to provide the necessary data for model development. Existing deficiencies in knowledge in each of these areas are discussed and the types of programs needed to provide the missing information are examined in detail. The report also includes a short history of model development, describing the various photochemical mechanisms developed to date. (Author)

UCRL-74564(Rev.1)/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
RADIATIVE TRANSFER CONSIDERATIONS FOR KINETIC MODELING AND SENSITIVITY STUDIES.
R. J. Gelinas. 28 Mar 73, 8p CONF-730614-1

Descriptors: (*Atmospheres, *Photon transport), Absorption, Cross sections, Oxygen, Radiations, Solar radiation, Spectra, Temperature dependence, Transport theory, Ultraviolet radiation.

For abstract, see NSA 28 05, number 12595.

4B. Meteorology

AD-767 660/4GA PC$9.00/MF$1.45
Naval Postgraduate School Monterey Calif
AN EVALUATION OF HONG KONG HARBOR AS A TYPHOON HAVEN.
Master's thesis,
Donald Alan Mautner. Sep 73, 139p

Descriptors: (*Hong Kong, *Tropical cyclones), (*Harbors, Tropical cyclones), Marine meteorology, Wind, Ocean waves, Tides, Theses.
Identifiers: *Hong Kong Harbor, Typhoon Rose, Typhoon Wanda, Harbor facilities, Typhoons, Storm surges, Storm tracks.

The study evaluates the harbor of Hong Kong as a typhoon haven. Characteristics of the harbor under tropical cyclone conditions, including topographical effects on the wind, storm surge and reliability of moorings and anchorages are discussed and highlighted by two case studies (Typhoon ROSE, August 1971 and Typhoon WANDA, September 1962). Problem areas to be considered if remaining in port and possible evasion procedures for ships sailing from the port are examined for tropical cyclones approaching from various directions. Tropical cyclone tracks for 87 years of data (1884-1970) for the western North Pacific Ocean are examined in order to determine the probability of threat to the port of Hong Kong. Results suggest early sortie action under threatening conditions by all Fleet units capable of evasion at sea. (Author)

AD-767 891/5GA PC$3.25/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
METHODS OF USING SATELLITE INFORMATION IN NUMERICAL ANALYSIS AND WEATHER FORECASTING,
A. I. Burtsev, and Sh. A. Musaelyan. 6 Sep 73, 21p
Rept no. FTD-HT-23-802-73
Edited trans. of Trudy v Vsesoyuznogo Meteorologicheskogo Sezda. Sektsiya Prognoza Progody (USSR) v2 p174-184 1972, by Paul J. Reiff.

Descriptors: (*Weather forecasting, Numerical analysis), Meteorological satellites, USSR, Cloud cover, Wind.
Identifiers: Translations, Numerical weather forecasting, Spaceborne photography.

Data on cloud cover distribution and the structure of cloud formations obtainable from weather satellites reflect a complex set of processes which transpire in the atmosphere. This circumstance can be used to determine the parameters of atmospheric conditions which satellites do not currently measure but which are extremely necessary for the purposes of numerical weather forecasting (pressure, wind). The research conducted along these lines has shown that, according to cloud cover data from weather satellites, the wind and geopotential fields can be established.

AD-767 892/3GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
THE CONNECTION OF CLEAR-AIR TURBULENCE WITH THE EVOLUTION OF A PRESSURE FIELD,
A. A. Vasilev. Sep 73, 16p Rept no. FTD-MT-24-745-73
Edited machine trans. of Analiz Meteorologicheskikh Uslovii dlya Aviatsii (USSR) n95 p27-35 1972, by Michael L. Seidel.

Descriptors: (*Clear air turbulence, Barometric pressure), Probability, Air mass analysis, USSR.
Identifiers: Fronts(Meteorology), Translations.

The probability of Clear Air Turbulence (CAT) significantly increases during flights above frontal lines at the surface of earth and almost does not depend on the features of surface pressure field and barometric tendency. The probability of CAT depends on a change in the geopotential height at flight level. However, this dependence is ambiguous and is determined by the form of the synoptic model. (Author)

AD-767 934/3GA PC$3.50/MF$1.45
Environmental Prediction Research Facility (Navy) Monterey Calif
OCEANIC FOG, A NUMERICAL STUDY.
Final rept.,
Edward H. Barker. Sep 73, 73p Rept no. ENVPREDRSCHFAC-tech paper-6-73

Descriptors: (*Fog, Marine meteorology), Weather forecasting, Mathematical models, Wind, Water vapor, Infrared radiation, Atmospheric temperature, Computer programs.
Identifiers: Planetary boundary layer, Fog dispersal, Cloud physics.

A numerical model was developed for the simulation of fog and stratus in the marine planetary boundary layer. Physical processes described by the model are eddy diffusion, horizontal advection, fog droplet settling, infrared radiation and change of thermodynamic state of moist air. Results of the computations show the relative importance of the processes considered in the development of stratiform clouds in the planetary boundary layer. Among the most important factors governing the extent of fog are the magnitudes of horizontal advection of heat and infrared radiation by cloud and water vapor. Comparisons of the computational results with existing observations show that the formation process has been adequately described. Additionally, it was shown that occurrence of fog over the ocean could result in air temperature colder than that of the sea surface, caused by radiation heat loss from the cloud top. Results indicate that a practical fog forecast model is feasible with certain refinements, such as inclusion of the effects of haze on the infrared radiation balance, inversion strength on the growth of the mixing layer depth, and insolation. (Author)

AD-767 944/2GA PC$11.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
HANDBOOK ON CLIMATE OF THE USSR, ISSUE 3: KARELIAN ASSR; LENINGRAD, NOVOGOROD, PSKOV OBLASTS. PART 5: CLOUD COVER AND ATMOSPHERIC PHENOMENA,
T. A. Pusan, A. D. Lozhkomoeva, A. T. Bychkova, and L. A. Malinina. 30 Aug 73, 177p Rept no. FTD-HT-23-17-74
Edited trans. of Spravochnik po Klimatu (USSR) n3 Karelskaya ASSR, Leningradskaya, Novgorodskaya i Pskovskaya Oblasti, pt5 Oblachnost i Atmosfernye Yavleniya p1-252 1968, by John A. Miller. See also AD-759 244.

Descriptors: (*Climatology, *USSR), Cloud cover, Fog, Snow, Storms, Thunderstorms, Hail, Atmospheric motion, Diurnal variations, Tables, Statistical data, Handbooks.
Identifiers: Translations.

The report contains statistical data on cloud cover, fog, snowstorms, thunderstorms, and hail as recorded at weather stations in the USSR.

AD-767 984/8GA PC$3.25/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
FORECAST FOR THE AVERAGE PERIODS OF LARGE-SCALE COMPONENTS OF ATMOSPHERIC CIRCULATION ON THE BASIS OF A NONLINEAR SPECTRAL MODEL,
S. A. Mashkovich, and I. G. Veil. 6 Sep 73, 23p Rept no. FTD-HT-23-803-73
Edited trans. of Trudy v Vsesoyuznogo Meteorologicheskogo Sezda. Sektsiya Prognoza Pogody (USSR) n2 p42-54 1972, by Paul J. Reiff.

Descriptors: (*Weather forecasting, Atmospheric motion), Atmosphere models, Boundary value problems, Partial differential equations, Kinetic energy, Power spectra, USSR.
Identifiers: Translations, Atmospheric circulation, Numerical weather forecasting.

It is almost impossible to define with uniform precision the entire spectrum of atmospheric movements when conducting a numerical forecast. Therefore, a model being used for long-range forecasting must describe in detail the evolution of the largest-scale components of atmospheric circulation approximately taking into consideration the effect of smaller-scale disturbances. The article gives the results of calculations conducted on the basis of a spectral model while using initial data as the starting information. It examines the question of the effect of initial information errors on the quality of the forecast.

AD-767 986/3GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
PROCEDURE FOR EVALUATING THE EFFECT OF CONVECTIVE CLOUD MODIFICATION FOR THE PURPOSE OF ARTIFICIALLY CONTROLLING PRECIPITATION AND THE RESULTS OF AIRCRAFT STUDIES ON THE STRUCTURE OF CUMULUS CLOUDS,
M. V. Buykov, F. Ya. Voit, and E. E. Kornienko. 6 Sep 73, 18p Rept no. FTD-HT-23-804-73
Edited trans. of Trudy v Vsesoyuznogo Meteorologicheskogo Sezda. Sektsiya Aktivnykh Vozdeistvii na Atmosfernye Protsessy (USSR) v4 p87-96 1972, by Louise E. Heenan.

Descriptors: (*Artificial precipitation, Cumulus clouds), Effectiveness, Statistical analysis, USSR.
Identifiers: Translations, *Cloud seeding, Weather modification.

As operational tests on the artificial control of precipitation have shown, one of the main factors ensuring the successful solution of this problem is an allowance for the physical properties of various forms of clouds in developing methods of modification and evaluating their effectiveness. The principal form of clouds subjected to modification by the UkrNIGMI in the warm part of the year was cumulus and cumulus congestus. In the first stage, all suitable clouds were seeded over the test area of the experimental meteorological proving ground (MPG) of the UkrNIGMI. The effect of the modification was evaluated by a comparison of the amount of precipitation over the test area and the control area of the MPG.

AD-767 987/1GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
ASSIGNING HEAT FLOWS DURING NUMERICAL EXPERIMENTS USING A THERMOTROPIC MODEL,
R. L. Kagan, and K. Ya. Vinnikov. 18 Sep 73, 16p Rept no. FTD-HT-23-504-73
Edited trans. of Gidrodinamicheskie Issledovaniya Tsirkulyatsii Atmosfery (USSR) n256 p98-107 1970, by John A. Miller.

Descriptors: (*Atmospheric motion, Heat transfer), Atmosphere models, Climatology, Atmospheric temperature, USSR.
Identifiers: Translations, Atmospheric circulation.

The article contains a description of climatological data on the total heat flow to the atmosphere, used for performing numerical experiments on the long-term integration of equations of the thermotropic model of atmospheric circulation. Analysis of these data is necessary for an understanding of the results of numerical experiments with this model, and is also of independent interest.

AD-768 045/7GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
INVARIANT-GROUP METHOD IN BOUNDARY VALUE PROBLEMS OF THE PLANETARY DYNAMICS OF THE ATMOSPHERE,
V. A. Efimov. 18 Sep 73, 14p Rept no. FTD-HT-23-506-73
Edited trans. of Gidrodinamicheskie Issledovaniya Tsirkulyatsii Atmosfery (USSR) n256 p147-154 1970, by Louise E. Heenan.

Descriptors: (*Atmospheric motion, Boundary value problems), Partial differential equations, Integration, Transformations(Mathematics), Hydrodynamics, USSR.
Identifiers: Translations, Lie groups.

AD-768 047/3GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
STUDY OF THE PHYSICOCHEMICAL AND ELECTRICAL PROPERTIES OF ATMOSPHERIC AEROSOLS,
M. A. Belyashova, O. P. Petrenchuk, and E. S. Selezneva. 1 Oct 73, 15p Rept no. FTD-HT-23-67-74
Edited trans. of Vsesoyuznaya Konferentsiya po Fizike Oblakov i Aktivnym Vozdeistviyam. Trudy (USSR) v8 p84-92 1970, by Victor Mesenzeff.

Descriptors: (*Aerosols, USSR), Ammonium compounds, Bicarbonates, Chemical analysis, Concentration(Chemistry), pH, Electrical conductance, Sulfates, Nitrates, Chlorides, Sodium, Potassium, Magnesium, Calcium, Air pollution, Atmospheric precipitation.
Identifiers: Translations, Physicochemical properties.

The translation presents results of chemical analysis and electrical conductivity and pH measurements of atmospheric aerosols and waters sampled over the European territory of the USSR.

AD-768 050/7GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
ACCOUNTING FOR BOUNDARY LAYER PROCESSES IN NUMERICAL SIMULATION OF TOTAL ATMOSPHERIC CIRCULATION,
A. S. Dubov, and L. R. Orlenko. 17 Sep 73, 19p Rept no. FTD-HT-23-503-73
Edited trans. of Gidrodinamicheskie Issledovaniya Tsirkulyatsii Atmosfery (USSR) n256 p45-56 1970, by Louise E. Heenan.

Descriptors: (*Atmospheric motion, Numerical analysis), Turbulence, Weather forecasting, USSR.
Identifiers: Translations, Atmospheric boundary layer.

AD-768 159/6GA PC$3.50/MF$1.45
Army Electronics Command Fort Monmouth N J Atmospheric Sciences Lab
OBJECTIVE ANALYSIS USING MODELED SPACE-TIME COVARIANCES: AN EVALUATION,
Claud H. Lacy. Oct 73, 58p ECOM-5514

Descriptors: (*Weather forecasting, Statistical analysis), Analysis of variance, Regression analysis, Matrix algebra, Graphics, Mathematical models.
Identifiers: Sensitivity analysis.

A new optimal interpolation type of objective analysis (Eddy's method) is applied to simulated and actual mesoscale data from the National Severe Storms Laboratory and White Sands Missile Range. The effects of data biases on the analysis model are discussed. Methods for estimating the data covariance as a function of space and time separation are discussed and applied to the data. Objectives analyses of the data are made using modeled space-time covariance functions. A sensitivity analysis indicates that the method is not overly sensitive to errors in the estimated parameters. The performance of the method on real and synthetic mesoscale data is compared to that of equally weighted and unequally weighted averages of neighboring stations which were closest in space and time. Frequency response surfaces of

averaging and Eddy's method are compared using the geometry of the White Sands Missile Range Network. (Author)

AD-768 308/9GA PC$7.25/MF$1.45
National Climatic Center Asheville N C
NORTH PACIFIC TROPICAL CYCLONE STRIKE PROBABILITIES. VOLUME I: 24 HOUR MOVEMENT,
Harold L. Crutcher, and Lee R. Hoxit. Sep 73, 101p
Sponsored in part by Naval Weather Service Command, Washington, D.C. See also Volume 2, AD-768 309.

Descriptors: (*Tropical cyclones, *Pacific Ocean), (*Weather forecasting, Tropical cyclones), Tracking, Mapping, Multivariate analysis, Probability, Marine meteorology.
Identifiers: North Pacific Ocean, Storm tracks, Bivariate analysis.

Probabilities relating to the future movement of North Pacific tropical cyclones are presented. The probabilities are based on observational data of successive 12-hour positions ov the centers of these storms. The data are stratified into five seasons (June-July, August, September, October, November-May). For the Western North Pacific, the period from November-May was sub-divided into three additional seasons (November, December-January, February-May). Geographical areas are defined by five-degree latitude-longitude squares. The probab lities are computed assuming the initial storm position or 'origin' is always at the center of the square and the traget areas are always circular areas with radii of one, two and three degrees latitude which are also located at the center of the squares. These probabilities indicate the chance of the storm center being within the target areas at the end of specified time intervals. Two sets of probabilities are presented for each square: one set for the case when the origin is at the center of the master square, and a second set for the case where the target areas are centered on this square. Values for time intervals of 24 hours, are presented. (Modified author abstract)

AD-768 309/7GA PC$9.25/MF$1.45
National Climatic Center Asheville N C
NORTH PACIFIC TROPICAL CYCLONE STRIKE PROBABILITIES. VOLUME II: 48 HOUR MOVEMENT,
Harold L. Crutcher, and Lee R. Hoxit. Sep 73, 142p
Sponsored in part by Naval Weather Service Command, Washington, D.C. See also Volume 1, AD-768 308 and Volume 3, AD-768 310.

Descriptors: (*Tropical cyclones, *Pacific Ocean), (*Weather forecasting, Tropical cyclones), Tracking, Mapping, Multivariate analysis, Probability, Marine meteorology.
Identifiers: North Pacific Ocean, Storm tracks, Bivariate analysis.

Probabilities relating to the future movement of North Pacific tropical cyclones are presented. The probabilities are based on observational data of successive 12-hour positons of the centers of these storms. The data are stratified into five seasons (June-July, August, September, October, November-May). For the Western North Pacific, the period from NOvember-May was sub-divided into three additional seasons (November, December-January, February-May). Geographical areas are defined by five-degree latitude-longitude squares. The probabilities are computed assuming the initial storm position or 'origin' is always at the center of the square and the target areas are always circular areas with radii of one, two and three degrees latitude which are also located at the center of the squares. These probilities indicate the chance of the storm center being within the target areas at the end of specified time intervals. Two sets of probabilities are presented for each square: one set for the case when the origin is at the center of the master square, and a second set for the case where the target areas are centered on this square. Values for time intervals of 48 hours are presented. (Modified author abstract)

AD-768 310/5GA PC$10.25/MF$1.45
National Climatic Center Asheville N C
NORTH PACIFIC TROPICAL CYCLONE STRIKE PROBABILITIES. VOLUME III: 72 HOUR MOVEMENT,
Harold L. Crutcher, and Lee R. Hoxit. Sep 73, 165p
Sponsored in part by Naval Weather Service Command, Washington, D.C. See also Volume 2, AD-768 309.

Descriptors: (*Tropical cyclones, *Pacific Ocean), (*Weather forecasting, Tropical cyclones), Tracking, Mapping, Multivariate analysis, Probability, Marine meteorology.
Identifiers: North Pacific Ocean, Storm tracks, Bivariate analysis.

Probabilities relating to the future movement of North Pacific tropical cyclones are presented. The probabilities are based on observational data of successive 12-hour positions of the centers of these storms. The data are stratified into five seasons (June-July, August, September, October, November-May). For the Western North Pacific, the period from November-May was sub-divided into three additional seasons (November, December-January, February-May). Geographical areas are defined by five-degree latitude-longitude squares. The probabilities are computed assuming the initial storm position or 'origin' is always at the center of the square and the target areas are always circular areas with radii of one, two and three degrees latitude which are also located at the center of the squares. These probabilities indicate the chance of the storm center being within the target areas at the end of specified time intervals. Two sets of probabilities are presented for each square: one set for the case when the origin is at the center of the master square, and a second set for the case where the target areas are centered on this square. Values for time intervals of 72 hours are presented. (Modified author abstract)

AD-768 333/7GA MF$1.45
Fleet Weather Central/Joint Typhoon Warning Center Fpo San Francisco 96630
ANNUAL TYPHOON REPORT, 1971.
Final rept. Jan-Dec 71.
May 72, 320p
Prepared in cooperation with Air Weather Service. See also report dated May 73, AD-768 334.
Availability: Available in microfiche only.

Descriptors: (*Tropical cyclones, *Pacific Ocean), Statistical data, Tracking, Aerial reconnaissance, Meteorological satellites, Wind, Warning systems, Weather forecasting.
Identifiers: *Typhoons, *Hurricanes, Bengal Bay, *North Pacific Ocean, Storm tracks, Spaceborne photography.

A brief narrative is given on each western Pacific typhoon. Tropical cyclone best tracks and data summary for all storms of typhoon-hurricane intensity are provided for the North Pacific Ocean and Bay of Bengal. Operational procedures and technical notes are also included in the report. (Author)

AD-768 334/5GA MF$1.45
Fleet Weather Central/Joint Typhoon Warning Center Fpo San Francisco 96630
ANNUAL TYPHOON REPORT, 1972.
Final rept. Jan-Dec 72,
Albert T. Buckmaster, and Hiroshi Nishimoto.
May 73, 139p
Prepared in cooperation with Air Weather Service. See also report dated May 72, AD-768 333.
Availability: Available in microfiche only.

Descriptors: (*Tropical cyclones, *Pacific Ocean), Statistical data, Tracking, Aerial reconnaissance, Meteorological satellites, Wind, Warning systems, Weather forecasting.
Identifiers: *Typhoons, *Hurricanes, Bengal Bay, *North Pacific Ocean, Storm tracks, Spaceborne photography.

A brief narrative is given on each western Pacific typhoon. Tropical cyclone best tracks and data summary for all storms of typhoon-hurricane intensity are provided for the North Pacific Ocean and Bay of Bengal. Operational procedures and technical notes are also included in the report. (Author)

ARLV-351-28/GA PC$3.00/MF$1.45
National Oceanic and Atmospheric Administration, Las Vegas, Nev. Air Resources Lab.
NUMERICAL PREDICTION OF THE MESOSCALE TRANSPORT OF ATMOSPHERIC EFFLUENTS: PHILOSOPHY AND MORPHOLOGY OF EXPERIMENTAL MODELS FOR PREDICTING THE WIND AND POTENTIAL RADIOLOGICAL FIELDS OVER THE NEVADA TEST SITE.
D. Randerson, and J. S. Cornett. May 73, 61p

Descriptors: (*Nevada test site, Meteorology), (*Meteorology, *Mathematical models), (*Radioactive clouds, Meteorology), Aerial monitoring, Comparative evaluations, Contamination, Geography, Nuclear explosions, Radiation monitoring, Radionuclide migration, Trajectories, Velocity, Wind.

For abstract, see NSA 28 06, number 12860.

BDX-613-921/GA PC$4.00/MF$1.45
Battelle Columbus Labs., Ohio.
DEVELOPMENT OF A DELIQUESCENT-CHEMICAL MAXIMUM HUMIDITY INDICATOR. FINAL REPORT.
R. B. Reif, P. F. Kurz, and R. A. Coppock. May 73, 29p
Contract AT(29-1)-613

Descriptors: (*Humidity, *Measuring instruments), Dyes, Hygrometry, Moisture gages.

For abstract, see NSA 28 05, number 12494.

BNL-17750/GA PC$7.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
EXPERIMENTAL DATA ON PARTICULATE DISPERSION INTO AND WITHIN A FOREST. PART I. DISPERSION FROM UPWIND POINT SOURCES.
G. S. Raynor, J. V. Hayes, and E. C. Ogden. Dec 72, 96p

Descriptors: (*Particles, *Diffusion), Aerosols, Forests, Meteorology, Pines, Pollen, Sampling, Wind.

For abstract, see NSA 28 05, number 12495.

BNWL-1651(Pt.1)/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
ANNUAL REPORT FOR 1971 TO THE USAEC DIVISION OF BIOLOGY AND MEDICINE. VOLUME II. PHYSICAL SCIENCES. PART 1. ATMOSPHERIC SCIENCES.
C. L. Simpson. Dec 72, 198p
Contract AT(45-1)-1830

Descriptors: (*Meteorology, *Research programs), Earth atmosphere, Gaseous wastes, Leading abstract, Nonradioactive waste disposal, Radioactive waste disposal, Waste disposal.

For abstract, see NSA 28 04, number 08123.

COM-73-11510/7GA Reprint
National Oceanic and Atmospheric Administration, Boulder Colo. Environmental Research Labs.
ELECTRON-MICROSCOPIC STUDY OF SILVER IODIDE AS CONTACT OR SUBLIMATION NUCLEI,
Farn P. Parungo. 4 Dec 72, 6p NOAA-73080909
Presented at Conference on Weather Modification (3rd) held at Rapid City, S. D. on 16 Jun 72.
Pub. in Jnl. of Applied Meteorology, v12 n3 p517-521 Apr 73.

Descriptors: (*Cloud seeding, Sliver iodide), (*Silver iodide, Ice formation), Crystal growth, Nucleation, Electron microscopy.

Experiments of ice nucleation by silver iodide were conducted in a cold chamber at various temperatures. The seeded ice crystals were replicated and an examination of the position of AgI nuclei in individual ice crystals was made using an electron microscope. The mechanism of ice nucleation is discussed. A search was made for evidence of coalescence between an AgI particle and a supercooled droplet followed by initiation of freezing and subsequent ice crystal growth. It was found that contact nucleation was a dominant mechanism at temperatures above -20C and at water supersaturations, but when temperatures were lower than -16C and the humidity decreased to ice supersaturation sublimation nucleation took place. (Modified author abstract)

COM-73-11523/0GA Reprint
National Environmental Research Center, Research Triangle Park, N.C.
AN EMPIRICAL MODEL USING EIGENVECTORS TO CALCULATE THE TEMPORAL AND SPATIAL VARIATIONS OF THE ST. LOUIS HEAT ISLAND,
John F. Clarke, and James T. Peterson. 5 Sep 72, 17p NOAA-73071314
Revision of report dated 3 Jan 72.
Pub. in Jnl. of Applied Meteorology, v12 n1 p195-210 Feb 73.

Descriptors: (*Atmospheric temperature, Urban areas), Missouri, Land use, Temperature inversions, Eigeovectors, Meteorological data, Missouri.
Identifiers: *Urban heat islands, *St. Louis(Missouri).

Eigenvectors, or empirical orthogonal functions, have been used to study the relationship between the St. Louis heat island and land use and meterological parameters. The data used in this study consisted of observations of nocturnal surface air temperature over St. Louis on 17 occasions during winter, spring, and summer of 1952-53. The spatial distribution of the heat island was shown to be primarily a function of land use, but meteorological variables, especially wind direction, also influenced the heat island patterns. The magnitude of the heat island had a significant positive correlation with the vertical temperature gradient outside the city. An empirical model is developed for St. Louis to study the heat island that would result from hypothetical land-use patterns and meteorological conditions. Examples are presented for two such land-use distributions. (Author)

COM-73-11525/5GA PC$5.25/MF$1.45
Bureau of Meteorology, Canberra (Australia). Dept. of Science.
DIGITAL PROCESSING OF METEOROLOGICAL RADAR SIGNALS,
Dale Sirmans. 1972, 62p Meteorological Study-25 NOAA-73080903

Descriptors: (*Meteorological radar, Signal processing), Radar signals, Digital techniques, Data processing, Precipitation(Meteorology), Australia.

The paper describes a signal processing technique which reduces the variance to an acceptale level for quantitative measurements using the log power output from the radar as the variable. The decrease in variance is a function of the number of samples taken, the statistical independence of samples and the input variance. The bulk of the paper describes in detail the digital averaging technique used to reduce the variance of the signal, the properties of resultant signal and circuit analysis in the various stages. A combination of range averaging over several (selectable) sample volume depths, and time averaging over selectable number of pulses is used. Engineering and meteorological factors affecting the type of averaging technique employed (exponential weighted time average and linear range average) and averaging intervals selected are considered in detail. The output following the averaging is available for a contoured display or for digital magnetic tape record. The statistical and other properties of this output data are discussed. (Modified author abstract)

COM-73-11564/4GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Environmental Research Labs.
HENRI DESSENS: THE SCIENTIST,
Helmut K. Weickmann. 1972, 6p NOAA-73080920
Pub. in Jnl. de Recherches Atmospheriques, v6 n1,2,3 p7-11 Jan-Sep 72.

Descriptors: (*Cloud physics, Scientists), (*Artifical precipitation, Scientists), Cloud seeding, Condensation nuclei, Dessication, Fog, Convection.
Identifiers: *Dessens Henri.

The report contains a brief review of some of the contributions of Henri Dessens in honor of his many contributions to the advancement of the atmospheric sciences. By collecting nuclei of all kinds on spider fibers, he was able to study condensation and dessication effects of nuclei under various conditions. He investigated various aspects of rainmaking. He was convinced that rain from certain clouds could only be produced by affecting the convective process itself. He developed the idea of hail prevention through seeding with silver iodide. He also observed that some causal connection must exist between the jet stream or high upper level wind speeds in general and heavy hailstorms.

COM-73-11573/5GA Reprint
California Univ., Livermore. Lawrence Radiation Lab.
TURBIDITY OF THE ATMOSPHERE: SOURCE OF ITS BACKGROUND VARIATION WITH THE SEASON,
Hugh W. Ellsaesser, R. F. Pueschel, and H. T. Ellis. 30 Mar 72, 3p NOAA-73080921
Pub. in Science, v176 p814-815, 19 May 72.

Descriptors: (*Atmospheric circulation, Seasonal variations), Turbidity, Solar radiation, Aerosols.

The author raises the question as to whether the use of solar radiation data on clear or control days reveals atmospheric turbidity variations reflecting changes in tropospheric composition as postulated by Ellis and Pueschel or changes in stratospheric composition as claimed by Dyer and Hicks. In response to this note Pueschel and Ellis confirm their views with the aid of additional data. They note that confined to the stratosphere or troposphere, the turbidity variations apparently are characteristic of the variations in the atmospheric backgorund aerosol. Any perturbation in the amplitude or phase of the annual periodicity, or both, such as was the case during 1963-1969, are indicative of a change in the colloidal composition of the atmosphere. They emphasize that such perturbations should be used to evaluate man's impact on our atmospheric environment.

COM-73-11576/8GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Atmospheric Physics and Chemistry Lab.
SUGAR CANE FIRES AS A SOURCE OF ICE NUCLEI IN HAWAII,
Rudolf F. Pueschel, and Gerhard Langer. 9 Jan 73, 4p NOAA-73080922
Revision of report dated 2 Nov 72.
Pub. in Jnl. of Applied Meteorology, v12 n3 p549-551 Apr 73.

Descriptors: (*Hawaii, Weather modification), (*Condensation nuclei, Weather modification), (*Fires, Weather modification), Sugarcane, Zinc, Copper.

The note presents data which suggests that the noncombustible inorganic content of the leaves of sugar cane which are rich in copper and zinc provide the material that is active in ice forming nuclei. Ice nucleus counts downwind from sugar cane fires are compared to other potential sources of nuclei on the island of Hawaii. It was shown that sugar cane fires are the most prolific single source of ice nuclei on the island of Hawaii.

COM-73-11607/1GA PC$4.75/MF$1.45
Nebraska Univ., Lincoln. Agricultural Experiment Station.
SPRING AND FALL FREEZE PROBABILITIES IN NEBRASKA,
Station bull.,
R. E. Neild, and Morris Webb, Jr. Apr 73, 53p SB-524 NOAA-73071311

Descriptors: (*Climate, *Nebraska), Seasonal variations, freezing, Probabilities, Statistical analysis.

The publication provides analyses of past weather records. The records suggest patterns of average spring and fall freeze dates and freeze-free season. Considerations in determining freeze hazard for specific locations are set forth. There follow observations on the effects of freezing temperature on plants, analysis of Spring and Fall freeze data and finally methods for determination of freeze probability.

COM-73-11616/2GA Reprint
National Weather Service, Windsor Locks, Conn.
AN OBJECTIVE METHOD OF PREPARING CLOUD COVER FORECASTS,
James R. Sims. 5 Feb 73, 5p NOAA-73082904
Revision of report dated 18 Sep 72.
Pub. in Jnl. of Applied Meteorology, v12 n4 p726-728 Jun 73.

Descriptors: (*Weather forecasting, Cloud cover), Clouds(Meteorology), Regression analysis, Massachusetts, Climatology.
Identifiers: Numerical weather forecasting, Boston(Massachusetts).

The numerical 6-hourly output from the six-layer NMC PE model is used to predict the average daytime cloudiness in the spring for Boston. The variables chosen as predictors are the PE model predictions of the mean surface to 500-mb relative humidity, the 700-mb vertical velocity, and the relative humidity trend through a 12-hr period. The cloud forecasts are obtained using a regression equation. The results demonstrate forecasting skill, in contrast to persistence, which is shown to be a poor predictor. (Author)

COM-73-11625/3GA Reprint
Colorado State Univ., Fort Collins. Dept. of Atmospheric Science.
NEW ESTIMATE OF ANNUAL POLEWARD ENERGY TRANSPORT BY NORTHERN HEMISPHERE OCEANS,
Thomas H. Vonder Haar, and Abraham H. Oort. 7 Nov 72, 5p NOAA-73092706
Grant NGR-06-002-102, NSF-GA-31588
Prepared in cooperation with Princeton Univ., N. J. Geophysical Fluid Dynamics Lab.

Pub. in Jnl. of Physical Oceanography, v3 n2 p169-172 Apr 73.

Descriptors: (*Air water interactions, Energy transfer), Ocean currents, Transport properties, Weather, Climate.

Recent measurements of the earth's radiation budget from satellites, together with extensive atmospheric energy transport summaries based on rawinsonde data, allow a new estimate of the required poleward energy transport by Northern Hemisphere oceans for the mean annual case. In the region of maximum net northward energy transport (30-35N), the oceans transport 47% of the required energy (1.7 x 10 to the 22nd power cal/year). At 20N, the peak ocean transport accounts for 74% at that latitude; for the region 0-70N the ocean contribution averages 40%. (Author)

COM-73-11643/6GA PC$2.75/MF$1.45
National Weather Service, Fort Worth, Tex. Southern Region.
OBJECTIVE ANALYSIS OF THE SEA SURFACE TEMPERATURE.
Technical memo.,
Brian R. Jarvinen. Aug 73, 21p NOAA-TM-NWS-SR-72 NOAA-73091912

Descriptors: (*Weather forecasting, Tropical cyclones), (*Oceans, Surface temperature), Hurricanes, Storms, Prediction.
Identifiers: Ocean surface.

A program has been developed which analyzes sea surface temperatures on an operational and research basis. Data were composited for five-day periods from the thirteenth to the seventeenth for the months of June, August, September, and October, during the 1972 hurricane season. Sea surface temperature and anomaly charts were computed. These charts are discussed in relation to tropical cyclone activity. A relationship exists between tropical cyclone activity and sea surface temperature. The real-time, objective analysis of sea surface temperature and computation of anomalies identify those areas of warm SST which can serve as ready sources of energy for development or intensification of tropical cyclones. (Modified author abstract)

COM-73-11663/4GA PC$2.75/MF$1.45
National Weather Service, Fort Worth, Tex. Southern Region.
A DECISION PROCEDURE FOR APPLICATION IN PREDICTING THE LANDFALL OF HURRICANES.
Technical memo.,
R. H. Simpson, and Brian R. Jarvinen. Aug 73, 16p NOAA-TM-NWS-SR-71

Descriptors: (*Weather forecasting, Hurricanes), (*Hurricane tracking, Warning systems), Bayes Theorem, Computer programming.
Identifiers: Bayesian analysis.

A Bayesian analysis, in real time, is made on the performance of competing numerical and statistical models in predicting the point at which a hurricane will make its landfall on a virtual coastline, 18 and 30 hours following the observations upon which the forecast is based. The results indicate to the hurricane forecaster how each model has performed and will identify the model whose next prediction will have the most dependable basis for a warning decision. This example of a machine program to process and organize information on the performance of competing hurricane prediction methods illustrates how Bayesian analyses may be combined with other statistical parameters to supply a basis for sound decisions on critical forecast problems. It is expected that this initial effort will open up many new avenues for applying decision and information analyses to the more formidable and intractable weather prediction problems, especially those of the tropics. (Modified author abstract)

COM-73-11727/7GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
CLOUD SEEDING. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Edward J. Lehmann. Oct 73, 142p* NTIS-WIN-73-071
Supersedes NTIS-PK-123.

Descriptors: (*Weather modification, Bibliographies), (*Cloud seeding, *Bibliographies), Hurricanes, Artificial precipitation, Water supply, Cloud physics, Nucleation, Fog dispersal, Rainfall.

The NTISearch bibliography contains 134 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts are divided into two sections. The first covers generalized studies on cloud seeding techniques and theory. This includes environmental and water resource planning studies. The second section presents specific experiments and the results obtained from them. (Author)

COM-73-50496-04/GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Rockville, Md.
MONTHLY WEATHER REVIEW. VOLUME 101, NUMBER 4, APRIL 1973.
Monthly rept.,
Harold A. Corzine. Apr 73, 116p NOAA-73071802
Paper copy available from GPO $19.00/year as C55.11:101, $1.75/copy as C55.11:101/4.

Descriptors: (*Weather forecasting, Periodicals), (*Weather, Northern Hemisphere), Atmospheric circulation, Atmospheric models, Atmospheric disturbances, Storms, Tropical cyclones, Hurricanes, Thunderstorms, Hail, Climatology, Storm surges.

The review contains articles describing original research results in meteorology and related sciences, with particular emphasis on numerical weather prediction, satellite meteorology, severe storms, general circulation of the atmospheres stratospheric meteorology, atmospheric turbulence and diffusion, air pollution, physical meteorology and air-sea interactions. In each issue is an article describing the Northern Hemisphere weather and circulation for the third month preceding the month of issue.

COM-73-50496-04-01/GA
(Order as COM-73-50496-04)
Massachusetts Inst. of Tech., Cambridge. Dept. of Meteorology.
GLOBAL MODEL OF THE GENERAL CIRCULATION OF THE ATMOSPHERE BELOW 75 KILOMETERS WITH AN ANNUAL HEATING CYCLE,
Kevin E. Trenberth. 27 Oct 72, 20p NOAA-73071802-1
Grant NSF-GA-10276, NSF-GA28203X
Revision of report dated 5 Jul 72.
Included in Monthly Weather Review, v101, n4 p287-305, Apr 73, COM-73-50496-04.

Descriptors: (*Atmospheric models, *Atmospheric circulation), Troposphere, Stratosphere, Mathematical models, Mesosphere.

The study is concerned with tropospheric-stratospheric coupling and the events associated with it. To test various hypotheses a numerical model was constructed of the atmosphere. The development of a nine-layer, quasi-geostrophic, highly truncated spectral model of the atmosphere is described. The model is global, extends to 0.05 mb (71 km) with roughly 10-km resolution in the stratosphere, and includes an annual heating cycle. Preliminary integrations without eddies reveal the seasonal variation of a thermally driven circulation. A model integration was made to simulate the months of December and January without nonzonal forcing, thus being more representative of a Southern Hemisphere winter. The overall features of the atmosphere were well simulated. (Modified author abstract)

COM-73-50496-04-02/GA
(Order as COM-73-50496-04)
Massachusetts Inst. of Tech., Cambridge. Dept. of Meteorology.
DYNAMIC COUPLING OF THE STRATOSPHERE WITH THE TROPOSPHERE AND SUDDEN STRATOSPHERIC WARMINGS,
Kevin E. Trenberth. 27 Oct 72, 18p NOAA-73071802-2
Grant NSF-GA-10276, NSF-GA-28203
Revision of report dated 5 Jul 72.
Included in Monthly Weather Review, v101, n4 p306-322, Apr 73, COM-73-50496-04.

Descriptors: (*Atmospheric models, *Atmospheric circulation), Stratosphere, Troposphere, Atmospheric temperature, Topography, Numerical integration.
Identifiers: *Stratospheric warming.

Numerical time integrations of a nine-layer, quasi-geostrophic, highly truncated spectral model of the atmosphere are used to study tropospheric-stratospheric interaction with particular regard to sudden stratospheric warmings. The model is global, extends to 0.05 mb (71 km) with roughly 10-km resolution in the stratosphere, and includes an annual heating cycle. Model integrations simulating the months of December and January were made without nonzonal forcing and with nonzonal heating and orography included, to represent Southern Hemisphere and Northern Hemisphere winters, respectively. (Modified author abstract)

COM-73-50496-04-03/GA
(Order as COM-73-50496-04)
National Weather Service, Coral Gables, Fla.
ATLANTIC HURRICANE SEASON OF 1972,
R. H. Simpson, and Paul J. Herbert. 23 Jan 73, 12p NOAA-73071802-3
Included in Monthly Weather Review, v101 n4 p323-333, Apr 73, COM-73-50496-04.

Descriptors: (*Hurricanes, *North Atlantic Ocean), Tropical cyclones, Storm tracks, Meteorological data, Tables(Data), Atmospheric pressure, Wind(Meteorology), Ocean tides, Rainfall.
Identifiers: Hurricane Agnes, Hurricane Betty, Hurricane Dawn, Tropical storm Carrie.

A general overview of the 1972 hurricane season in the North Atlantic is presented together with detailed accounts of all named tropical cyclones. The 1972 hurricane season was notable for at least three reasons. First, fewer tropical storms and hurricanes formed in the Atlantic than in any season since 1930. Secondly, in 1972 as in 1971, most of the tropical cyclones developed in temperate latitudes, Agnes being the only one to form in the Tropics. Finally, 1972 will be remembered as the year of record hurricane damage. Hurricane Agnes, following a 700 mile overland excursion after its landfall in northwest Florida, was responsible for the most damaging floods ever recorded. Excessive rains fell in Pennsylvania, Maryland, and Virginia. Property damage in the U.S. attributed to Hurricane Agnes is estimated to be near $3.1 billion.

COM-73-50496-04-04/GA
(Order as COM-73-50496-04)
National Hurricane Center, Coral Gables, Fla.
ATLANTIC TROPICAL SYSTEMS OF 1972,
Neil L. Frank. 27 Feb 73, 6p NOAA-73071802-4
Included in Monthly Weather Review, v101 n4 p334-338, Apr 73, COM-73-50496-04.

Descriptors: (*Atmospheric disturbances, *North Atlantic Ocean), Storm tracks, Tropical cyclones, Storms, Hurricanes, Depressions, Meteorological data.

The 1972 hurricane season produced 113 'seedlings' of which 24 acquired the closed circulation of a depression. This was the largest number of tropical systems observed since the National Hurricane Center began keeping records in 1968. The reason for this high number was the unusual development of many subtropical cyclones in temperate latitudes. Details are given on the census of 1972 tropical storms and a comparison with other years is made. During the 5 year period 1967-71, approximately 75% of the named storms and depressions were initiated by seedlings of the tropical type and only 25% by baroclinic seedlings. The opposite was true in 1972 with 75% of the depressions and storms spawned by the baroclinic seedlings. In a normal year, African systems initiated approximately half of the Atlantic storms and depressions. In 1972, however, only one storm (Dawn) and only six of the 24 depressions came from this source.

COM-73-50496-04-05/GA

(Order as COM-73-50496-04)

National Weather Service Forecast Office, Redwood City, Calif.

EASTERN NORTH PACIFIC HURRICANE SEASON OF 1972,

Robert A. Baum. 16 Jan 73, 12p NOAA-73071802-5

Included in Monthly Weather Review, v101 n4 p339-349 Apr 73, COM-73-50496-04.

Descriptors: (*Hurricanes, *North Pacific Ocean), Tropical cyclones, Storm tracks, Meteorological data, Spaceborne photography.
Identifiers: Hurricane Annette, Tropical storm Bonny, Hurricane Celeste, Hurricane Diana, Hurricane Estelle, Hurricane Fernanda, Hurricane Gwen, Hurricane Hyacinth, Tropical storm Iva, Hurricane Joanne, Tropical storm Kathleen, Tropical storm Liza, ATS-1 satellite, ATS-3 satellite, ESSA-8 satellite, ESSA-9 satellite.

The 1972 tropical cyclone season in the eastern North Pacific Ocean is discussed and compared with past hurricane seasons. Pictures from the Advanced Technology Satellite series (ATS 1 and 3) show five storms or developing storms at one time. Storm tracks and a brief discussion of each storm are included. The season began on May 31 and continued through November 15. Satellite coverage of the storm area was superior to that of previous years. Automatic picture transmission from ESSA 8 gave a morning picture of the storm area and that from ESSA 9 gave an afternoon picture. Real-time Applications Technology Satellite (ATS 1 and 3) pictures became available routinely through NESS after August 2. Forty-six reconnaissance flights were flown by the 55th Weather Reconnaissance Wing with an average of 15 observations per flight.

COM-73-50496-04-06/GA

(Order as COM-73-50496-04)

National Weather Service, Reno, Nev. Weather Service Office.

APPLICATION OF THE POISSON AND NEGATIVE BINOMIAL MODELS TO THUNDERSTORM AND HAIL DAYS PROBABILITIES IN NEVADA,

Clarence M. Sakamoto. 2 Mar 73, 7p NOAA-73071802-6

Revision of report dated 27 Mar 72.
Included in Monthly Weather Review, v101 n4 p350-355, Apr 73, COM-73-50496-04.

Descriptors: (*Thunderstorms, Probability distribution functions), (*Hail, Probability distribution functions), Nevada, Binomial density functions, Poisson density functions, Computer programming.

Rare events such as thunderstorm or hail days often fit one of two distributions, the Poisson or the negative binomial. These two models were tested on monthly and annual thunderstorm days as well as on annual hail days at five locations in Nevada. A procedure for calculating efficient estimates of the parameters for the negative binomial distribution, using the iterative process and the second-order polynomial model, is described. Results of the program applied to five sites in Nevada are discussed. (Author)

COM-73-50496-04-07/GA

(Order as COM-73-50496-04)

Oregon State Univ., Corvallis.

MARINE AIR PENETRATION IN WESTERN OREGON: AN OBSERVATIONAL STUDY,

Lars E. Olsson, William P. Elliott, and Sheng-I Hsu. 3 Mar 73, 8p NOAA-73071802-7

Revision of report dated 5 Jul 72.
Included in Monthly Weather Review, v101 n4 p356-362 Apr 73, COM-73-50496-04.

Descriptors: (*Climatology, *Oregon), Coastal topographic features, Sea breezes, Marine meteorology, Wind(Meteorology), Atmospheric temperature, Valleys, Atmospheric circulation.

Marine air penetration into the interior valleys along the west coast of the United States is of major importance in determining the climate in those areas. The penetration is caused by a complex interaction between the sea breeze, various topographic winds, and the prevailing northnorthwest gradient wind in the summer and early fall. Synoptic conditions conducive to the development of these mesoscale circulations prevail on more than 75% of the days during this period. The characteristics of the coastal air circulation are discussed.

COM-73-50496-04-08/GA

(Order as COM-73-50496-04)

National Weather Service, Silver Spring, Md. Techniques Development Lab.

MARINE CONDITIONS AND AUTOMATED FORECASTS FOR THE ATLANTIC COASTAL STORM OF FEBRUARY 18-20, 1972,

N. Arthur Pore. 7 Feb 73, 9p NOAA-73071802-8

Revision of report dated 12 Oct 72.
Included in Monthly Weather Review, v101 n4 p363-370 Apr 73, COM-73-50496-04.

Descriptors: (*Storms, Coasts), (*Storm surges, Forecasting), (*Ocean waves, Forecasting), Weather forecasting, Ocean tides, Atlantic Ocean, United States.

The storm surge and ocean waves associated with the Atlantic coastal storm of Feb. 18-20, 1972, caused extensive damage along beaches of Long Island and New England. Meteorological conditions of the storm, along with resulting tides, surges, and waves, are described. Comparison is made with forecasts of the storm produced by the primitive-equation model of the National Meteorological Center, as well as with automated forecasts of storm surge and wave height. It is concluded that the meteorological forecasts and the resulting storm surge and wave forecasts were quite good. (Author)

COM-73-50496-04-09/GA

(Order as COM-73-50496-04)

Institute of Tropical Meteorology, Poona (India).

TRENDS AND PERIODICITIES OF RAINFALL OVER INDIA,

P. Jagannathan, and B. Parthasarathy. 10 Jan 73, 6p NOAA-73071802-9

Revision of report dated 30 Sep 71.
Included in Monthly Weather Review, v101 n4 p371-375 Apr 73, COM-73-50496-04.

Descriptors: (*Rainfall, *India), Periodic variations, Solar cycle.

Trends and periodicities in the annual rainfall of India were studied using data for 48 stations having record lengths of over 70 yr. Increasing or decreasing rainfall tendencies were found over large continuous areas in India. These trends, however, are not significant over all the stations in the areas but only at a few places distributed at random. Wherever a trend is significant, it has persistance or a periodicity of more than 40 yr. Quasibiennial oscillation (QBO) is exhibited at several stations in the areas of increasing or decreasing trend. Similarly, the 11-yr cycle (solar cycle) is also exhibited in both areas. The QBO and the solar cycle are both present at only three stations, however. This casts a serious doubt on whether or not there is any physical relation between the QBO and the solar cycle, at least for rainfall. (Author)

COM-73-50496-04-10/GA

(Order as COM-73-50496-04)

Pacific Missile Range, Point Mugu, Calif. Geophysics Div.

PICTURE OF THE MONTH: LATE SUMMER HAZARDS TO COASTAL SOUTHERN CALIFORNIA,

Jay Rosenthal. 16 Jan 73, 3p NOAA-73071802-10

Revision of report dated 25 Sep 72.
Included in Monthly Weather Review, v101 n4 p376-377 Apr 73, COM-73-50496-04.

Descriptors: (*Hurricanes, California), Spaceborne photography, Tropical cyclones, Forest fires.
Identifiers: ESSA 8 satellite, Hurricane Fernanda, Tropical storm Gwen, Hurricane Hyacinth.

The picture of the month shows late summer hazards to the coast of southern California. On Aug. 23, 1972, ESSA 8 APT pictures were received at the U. S. Navy's Pacific Missile Range, Point Mugu, California. The mosaic shown here revealed three mature and incipient disturbances out of a total of six hurricanes that developed during the period August 7 through August 30. Shown are the mature hurricane Fernanda, the developing tropical storm Gwen, possible harbingers of not-yet formed hurricane Hyacinth and a smoke plume from a major brush fire in Los Padres National Forest of southern California.

COM-73-50496-04-11/GA

(Order as COM-73-50496-04)

National Environmental Satellite Service, Washington, D.C. Applications Group.

CORRESPONDENCE. COMMENTS ON 'THE UNNAMED ATLANTIC TROPICAL STORMS OF 1970',

Edward W. Ferguson. 12 Jul 72, 3p NOAA-73071802-11

Included in Monthly Weather Review, v101 n4 p378-379 Apr 73, COM-73-50496-04.

Descriptors: (*Tropical cyclones, *Atlantic Ocean), Storms, Atmospheric disturbances, Wind(Meteorology), Atmospheric pressure, Spaceborne photography.
Identifiers: ATS-3 satellite.

In commenting on Spiegler's 1971 paper on 'The Unnamed Atlantic Tropical Storms of 1970', the author notes that the cloud pattern and distributions as observed in satellite data was much the same as that produced by intense hurricanes but on a much smaller scale. Data obtained from ships was examined to determine whether surface winds generated by a system of this type were of hurricane force. He found that maximum intensity appears to occur after the storm is caught in the westerlies and moving rapidly to the east or northeast. The storms that deepened most rapidly were located near a cold front, but maintained a separate entity in cloud distribution and wind circulation. The author suggests that a baroclinic zone acts as an energy source to systems of this type. The strongest surface winds are generally in the western semicircle of the storm and confined to within 30-40 n. mi of the storm center.

COM-73-50496-04-12/GA

(Order as COM-73-50496-04)

Environmental Research and Technology, Inc., Lexington, Mass.

CORRESPONDENCE: REPLY BY DAVID B. SPIEGLER ON COMMENTS ON 'THE UNNAMED ATLANTIC TROPICAL STORMS OF 1970' BY EDWARD W. FERGUSON,
David B. Spiegler. 11 Sep 72, 2p NOAA-73071802-12
Included in Monthly Weather Review, v101 n4 p38 Apr 73, COM-73-50496-04.

Descriptors: (*Tropical cyclones, *Atlantic Ocean), Storms, Atmospheric disturbances, Intensity, Latent heat.

In response to E. V. Ferguson's comments, in the preceeding note in this issue of the Monthly Weather review, on the author's 1971 paper on 'The Unnamed Atlantic Tropical Storms of 1970', the author David B. Spiegler indicates basic agreement with the suggestion that intensification of semitropical cyclones is due partly to baroclinic energy sources and that the further increase in intensity of the storm on Aug. 18, 1970, from that of the previous day may have been both a baroclinic and tropical development. But Spiegler adds that his main point is that all available data indicates that the initial strengthening to tropical storm and hurricane intensity on August 17 and early on August 18 was due primarily to release of latent heat associated with the organized convection that was apparent from satellite pictures.

COM-73-50496-04-13/GA
(Order as COM-73-50496-04)
National Meteorological Center, Washington, D.C.
WEATHER AND CIRCULATION OF JANUARY 1973. STRONG WARMING TREND AROUND MIDMONTH,
A. James Wagner. 1973, 7p NOAA-73071802-13
Included in Monthly Weather Review, v101 n4 p381-386 Apr 73, COM-73-50496-04.

Descriptors: (*Atmospheric circulation, Northern Hemisphere), (*Weather, United States), Atmospheric pressure, Atmospheric temperature, Precipitation(Meteorology), Wind(Meteorology).

A vigorous circulation continued to dominate the Northern Hemisphere during January 1973. The marked blocking ridge that had developed in Europe during December retrograded slightly and connected with the Azores ridge during January while remaining strong. The configuration of the 700-mb wind maximum during January was similar to that of the previous month. The principal warm and cold areas were similar to the main features of the mean height anomaly pattern. January was generally milder than normal across the northern third of the Nation from Montana to southern New England, with the largest anomaly of more than 9 degrees above normal located in the Northern Plains. Strong Chinook winds frequently swept across this area, and Rapid City, S. Dakota reported a record 6 days with maximum temperatures over 60 degrees. The precipitation pattern also was correlated with the height and temperature anomalies. Heaviest precipitation relative to normal was observed across the southern half of the country, with central California and portions of the southern and central Rocky Mountains and Great Plains receiving more than twice the normal. Albuquerque New Mexico reported 9.5 in of snow, the sum of several storms and a new record January total. Variability within the month is given in some detail.

COM-73-50496-05/GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Rockville, Md.
MONTHLY WEATHER REVIEW. VOLUME 101, NUMBER 5, MAY 1973.
Monthly rept.,
Harold A. Corzine. May 73, 92p NOAA-73081601
Paper copy available from GPO $19.00 as C55.11:101, $1.75/copy as C55.11:101/5.

Descriptors: (*Weather forecasting, Periodicals), (*Atmospheric circulation, Meteorological data), Air pollution, Atmospheric diffusion, Atmospheric models, Atmospheric composition, Ozone, Storms, Gravity waves, Gales, Precipitation(Meteorology).

The document contains articles describing original research results in meteorology and related sciences, with particular emphasis on numerical weather prediction, satellite meteorology, severe storms, general circulation of the atmospheres stratospheric meteorology, atmospheric turbulence and diffusion, air pollution, physical meteorology and air-sea interactions. In each issue is an article describing the Northern Hemisphere weather and circulation for the third month preceding the month of issue.

COM-73-50496-05-01/GA
(Order as COM-73-50496-05)
Wisconsin Univ., Milwaukee. Center for Great Lakes Studies.
DETAILED MESOMETEOROLOGICAL STUDIES OF AIR POLLUTION DISPERSION IN THE CHICAGO LAKE BREEZE,
Walter A. Lyons, and Lars E. Olsson. 2 Mar 73, 18p Contrib-80 NOAA-73081601-1
Revision of report dated 20 Dec 72. Prepared in cooperation with Oregon State Univ., Corvallis. Dept. of Atmospheric Science.
Included in Monthly Weather Review, v101 n5 p387-403, May 73, COM-73-50496-05.

Descriptors: (*Air pollution, Illinois), (*Atmospheric diffusion, Great Lakes), Micrometerology, Atmospheric circulation, Wind(Meteorology), Smoke, Aerosols, Lake Michigan.
Identifiers: Chicago(Illinois).

The paper shows that lake breezes frequently exert drastic control on mesoscale air pollution patterns in urbanized shoreline areas, in this case, Chicago, Ill. An instrumented aircraft took continuous cross sections of particulate concentrations and temperature through the lake-breeze life cycle. The smaller suspended particulates (0.5-3.0 micrometers), which essentially float with the air, clearly suggest that a significant fraction of the pollutants released from nearshore sources move inland within the inflow, rise aloft at the front, advect lakeward in the return flow layer, and then sink back down into the inflow layer offshore. By contrast, larger particles (7-9 micrometers), having significant terminal velocities, fall out of the cell while over the lake and do not appear to take part in the recirculation phenomena. The role of continuous fumigation of plumes from elevated point sources is also discussed. A schematic model of the lake breeze and its effects on pollutant transport is presented. (Modified author abstract)

COM-73-50496-05-02/GA
(Order as COM-73-50496-05)
Oklahoma Univ., Norman. Dept. of Meteorology.
LONG-RANGE TRANSPORT OF AIR POLLUTION: A CASE STUDY, AUGUST 1970,
Franklin P. Hall, Jr., Claude E. Duchon, Laurence G. Lee, and Richard R. Hagan. 27 Dec 72, 9p NOAA-73081601-2
Revision of report dated 18 Sep 72.
Included in Monthly Weather Review, v101 n5 p404-411, May 73, COM-73-50496-05.

Descriptors: (*Air pollution, Atmospheric circulation), Advection, Wind(Meteorology), Atmospheric temperature.

An air pollution episode during August 1970 over the central United States is examined. By use of surface visibilities and an 850-mb wind trajectory analysis, the authors observed the pollution to advance as much as 700 mi from the central midwest (source region) into the upper midwest and Great Plains (impact area). A large, nearly stationary high-pressure system over the source region allowed the pollution to accumulate beneath a mid level subsidence inversion located generally near 700 mb. Southeasterly flow around the backside of the High and the northeasterly flow around a weak Low to the south advected the pollution into the impact area. At times, surface visibilities in parts of the impact area were restricted by haze to as little as 4 mi. Although particulate count data were meager, several stations recorded their highest particulate count of the year during the episode. (Author)

COM-73-50496-05-03/GA
(Order as COM-73-50496-05)
RAND Corp., Santa Monica, Calif.
ANALYSIS OF THE MEAN FORCING FIELDS SIMULATED BY THE TWO-LEVEL, MINTZ-ARAKAWA ATMOSPHERIC MODEL,
W. Lawrence Gates. 18 Dec 72, 15p NOAA-73081601-3
Revision of report dated 17 Jul 72.
Included in Monthly Weather Review, v101 n5 p412-425 May 73, COM-73-50496-05.

Descriptors: (*Atmospheric circulation, Atmospheric models), Wind(Meterology), Zonal flow, Atmospheric temperature, Heating, Moisture content.

The global distributions of the mean January surface wind stress, the net diabatic heating rate, and the net rate of moisture addition as simulated in a 30-day integration with the two-level, Mintz-Arakawa atmospheric general circulation model are presented. The latitudinal distributions of the zonal averages of these forcing fields are shown to be in reasonable agreement with the available observations. (Modified author abstract)

COM-73-50496-05-04/GA
(Order as COM-73-50496-05)
National Oceanic and Atmospheric Administration, Silver Spring, Md. Air Resources Labs.
QUASI-BIENNIAL AND LONG-TERM FLUCTUATIONS IN TOTAL OZONE,
J. K. Angell, and J. Korshover. 6 Mar 73, 19p NOAA-73081601-4
Revision of report dated 26 Sep 72.
Included in Monthly Weather Review, v101 n5 p426-443 May 73, COM-73-50496-05.

Descriptors: (*Atmospheric composition, *Ozone), Zonal flow, Volcanoes, Sunspots, Nuclear explosions, Correlation Techniques.

Quasi-biennial and long-term fluctuations in total ozone are estimated from stations with more than 4 yr of record in north polar, tropical, south temperature, and south polar latitudes and more than 8 yr of record in north temperate latitudes. The quasi-biennial total-ozone fluctuations tend to be out of phase in tropical and extratropical latitudes, with the extratropical fluctuations better organized in the Southern than Northern Hemisphere. In the Tropics, the quasi-biennial total-ozone and zonal wind oscillations are significantly in phase, but in extratropical latitudes, the total-ozone fluctuations are alternately in phase and out of phase with the tropical zonal wind oscillation, the out-of-phase relation being the dominant one. There is the suggestion that the Mt. Agung volcanic eruption in 1963 caused a breakdown of the quasi-biennial, total-ozone oscillation in the Southern Hemisphere subtropics, with anomalously high ozone values a few months after the eruption. The authors derive, for the past 15-20 yr, an increase in total ozone of 3.9 percent per decade in the Northern Hemisphere, a decrease of 1.2 percent per decade in the Southern Hemisphere, and a world-wide increase of 1.5 per cent per decade. (Modified author abstract)

COM-73-50496-05-05/GA
(Order as COM-73-50496-05)
Fleet Weather Central (Guam). Joint Typhoon Warning Center.

PICTURE OF THE MONTH. MULTIPLE TROPICAL STORMS IN THE WESTERN NORTH PACIFIC,
Charles R. Holliday. 1973, 3p NOAA-73081601-5
Included in Monthly Weather Review, v101 n5 p444-445 May 73, COM-73-50496-05.

Descriptors: (*Storms, *North Pacific Ocean), Spaceborne photography, South China Sea, Marshall Islands, Tropical cyclones, Typhoons.
Identifiers: ESSA 9 satellite, Typhoon Phyllis, Typhoon Rita, Typhoon Tess, Tropical storm Susan.

The picture of the month is the ESSA 9 mosaic for July 1972. It records the presence of four tropical storms between the South China coast and the Marshall Islands. Three typhoons (Phyllis, Rita, Tess) and one tropical storm (Susan) are portrayed. The tracks of these storms during July 1972 are also illustrated. With the exception of August 1960 no other period on record in the western North Pacific Ocean has witnessed such a simultaneous number of developed tropical storms. Rita set a record, persisting as a tropical cyclone for 22 days. Rita reached maximum winds of 150 kt. Luzon Island experienced its worst floods since World War II.

COM-73-50496-05-06/GA
(Order as COM-73-50496-05)
State Univ. of New York, Albany. Dept. of Atmospheric Sciences.
GRAVITY WAVE PHENOMENA ACCOMPANYING EAST COAST CYCLOGENESIS,
Lance F. Bosart, and John P. Cussen, Jr. 8 Jan 73, 10p NOAA-73081601-6
Revision of report dated 27 Aug 72.
Included in Monthly Weather Review, v101 n5 p446-454 May 73, COM-73-50496-05.

Descriptors: (*Gravity waves, Southeast United States), Fronts(Meteorology), Wind(Meteorology), Atmospheric Temperature, Atmospheric pressure, Precipitation(Meteorology), Wave propagation.
Identifiers: Cyclogenesis.

A remarkable example of gravity wave propagation over the southeastern United States on Dec. 3, 1968, is described. The wave developed within the cold air north of a quasi-stationary front along the coast of the Gulf of Mexico in apparent response to convective activity associated with a weak cyclonic disturbance on the front. The wave maintained its identity for 14 hr while propagating east-southeastward at 13 m/s in a direction nearly opposite to the low-level flow. Gravity-wave-related pressure drops exceeded 7 mb over an average period of 1 hr. Strong and gusty winds blowing perpendicularly to the isobars toward lower pressure accompanied the wave-related pressure fall. Precipitation of several hours duration ceased abruptly with the wave passage, along with increases in the ceiling and horizontal visibility. Comparison is made with results from other papers dealing with wave propagation along frontal surfaces. (Author)

COM-73-50496-05-07/GA
(Order as COM-73-50496-05)
United Nations Development Program, Manila (Philippines).
THE ROLE OF DEEP CONVECTION AND STRONG WINDS ALOFT IN TRIGGERING GALES OVER THE PERSIAN GULF: COMPARATIVE CASE STUDIES,
Pieter J. Feteris. 1 May 73, 7p NOAA-73081601-7
Revision of report dated 21 Dec 71.
Included in Monthly Weather Review, v101 n5 p455-460 May 73, COM-73-50496-05.

Descriptors: (*Gales, *Persian Gulf), Convection, Latent heat, Fronts(Meteorology), Energy transfer.

A situation that led to rapid development of strong winds over the Northern Persian Gulf is compared with a similar situation in which gales were anticipated but did not occur. In both cases, cold air accumulated over Syria and Northern Iraq. In the first case, deep moist convection over the mountains of Northwestern Iran was coupled with a rapid southwest surge of a tongue of cold air into the Persian Gulf. In the second case, deep convection did not occur, and the cold air did not move southward. Release of latent heat by deep convection and merging of the rising currents with strong winds aloft seemed to have reinforced upslope winds near the surface in the first case, which lifted the warm air in front of the advancing cold air. This explanation is made plausible by a simple energy budget. (Author)

COM-73-50496-05-08/GA
(Order as COM-73-50496-05)
National Meteorological Center, Washington, D.C.
WEATHER AND CIRCULATION OF FEBRUARY 1973. AN ACTIVE LOW-LATITUDE STORM TRACK ACROSS THE UNITED STATES,
Robert R. Dickson. 1973, 7p NOAA-73081601-8
Included in Monthly Weather Review, v101 n5 p461-466 May 73, COM-73-50496-05.

Descriptors: (*Atmospheric circulation, Precipitation(Meteorology)), United States, Storm tracks, Atmospheric temperature, Westerlies.

The strong midlatitude westerlies of January slowed markedly in February as their core moved south of normal in the eastern Pacific Ocean and north of normal over the Atlantic Ocean. With the change from ridge to trough along the east coast of the U.S., the ridge over the Atlantic Ocean grew stronger during February and the westerlies moved north of normal. Vorticity maxima were driven into Europe, replacing the previously persistent mean ridge with a deep mean trough. Over Asia, height anomalies were generally small. In response to the advective field associated with the strong ridge in western North America and the deep troughs over Hudson Bay and Southeast, cold weather prevailed over the East and South. Below-normal temperatures also were observed in the central and southern Rocky Mountains, an area of anomalous snow cover during much of the month. In advance of the deep eastern Pacific mean trough, strong southerly flow brought mild temperatures to the Far West. Temperatures all exceeded normal over the northern and central Great Plains. The storm track across the southern half of the country was unusually active this month. There was more precipitation than normal from California to Texas and in the Southeast.

COM-73-50810/3GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Boulder, Colo. Weather Modification Program Office.
DIODE AND THERMOCOUPLE AIRGORNE TEMPERATURE SENSORS.
Technical rept.,
G. Conrad, L. N. D. DeVol, and J. E. Gunnoe. Mar 73, 26p NOAA-TR-ERL-270, WMPO-2 NOAA-73081606
Paper copy available from GPO $0.50 as C55.13:ERL-270-WPMO-2.

Descriptors: (*Temperature measuring instruments, Airborne equipment), Semiconducts diodes, Silicon, Thermocouples, Sensor characteristics, Schematic diagrams.

The report discusses the Research Flight Facility's use of both silicon diodes and thermocouple devices as airborne temperature sensors. Illustrations show the diode vortex temperature system, the diode assembly, the principle of TC linearization, the airborne prototype of summing amplified TC linearizer, and the summing amplifier. Finally the results of the TC summing amplifier test are presented.

COM-73-50813/7GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Boulder, Colo. Weather Modification Program Office.
ANALYSIS OF STORMFURY DATA USING THE VARIATIONAL OPTIMIZATION APPROACH.
Technical rept.,
Robert C. Sheets. Apr 73, 104p NOAA-TR-ERL-264, WMPO-1 NOAA-73061911
Paper copy available from GPO $1.45 as C55.13:ERL264-WMPO1.

Descriptors: (*Hurricanes, *Cloud seeding), Data processing, Statistical analysis, Kinetic energy, Wind velocity.
Identifiers: Stormfury project, Hurricane Debbie.

The variational optimization technique is used to develop a scheme to analyze the high energy portion of a hurricane. The derived analysis equations are used to filter the data in an attempt to obtain the signal for selected scales of motion. The particular filters were designed from empirical evidence. These filters are also used to develop variability factors for the standard meteorological parameters and selected scales of motion. A second set of analysis equations is derived which includes the first set as well as the gradient wind condition. These analysis schemes are applied to data collected in Hurricane Debbie (1969) during two artificial modification attempts. The results of these analyses are then used to define a more explicit seeding hypothesis which can explain and evaluate future seeding experiments. The validity of the technique is based on empirical evidence, since statistical evaluation is quite difficult to obtain. Although strong physical inferences can be drawn from this analysis, more such data analyses are required before strong statistical support can be claimed. (Author)

COM-73-50832/7GA PC-GPO/MF$1.45-NTIS
Department of Commerce, Washington, D.C.
WORLD WEATHER PROGRAM, PLAN FOR FISCAL YEAR 1974.
Jun 73, 48p NOAA-73072304
Prepared in cooperation with Department of Defense, Washington, D.C., Department of State, Washington, D.C., Department of Transportation, Washington, D.C. Environmental Protection Agency, Washington, D.C. Atomic Energy Commission, Washington, D.C., National Aeronautics and Space Administration, Washington, D.C., and National Science Foundation, Washington, D.C.

Descriptors: (*Weather observations, Global communication), Research management, Weather forecasting, Weather communication, Meteorological satellites, Remote sensing, Weather reconnaissance aircraft, Mathematical models, Buous, Meteorological balloons, Systems engineering.
Identifiers: GARP(Global Atomospheric Reasearch Program), Global atmospheric research program.

The report describes the U. S. activities that contribute directly or indirectly to the World Weather Program. It is divided into four sections. The first highlights the first GARP Global Experiment and places it in perspective relative to the WWP. Section 2 discusses the broad aspects of U.S. participation in the WWP. The third section includes specific elements of the U.S. effort planned for FY 1974. Afiscal summary of these programs is contained in the last section.

COM-73-50838/4GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Silver Spring, Md. Environmental Data Service.
CATALOG OF METEOROLOGY SATELLITE DATA-ITOS 1 TELEVISION CLOUD PHOTOGRAPHY.
Rept. for 1 Oct-31 Dec 70.
1973, 213p KMRD-5.328 NOAA-73091910
Pub. as Key to Meteorological Records Documentation. See also report dated 1971, COM-72-50074.

Paper copy available from GPO $2.25 as stock no. 0319-0008.

Descriptors: (*Clouds(Meteorology), *Spaceborne photography), Photographs, Meteorological data, Cloud cover, Meteorological satellites, Tables(Data).
Identifiers: ITOS-1 satellite.

This issue is one of a series of catalogs describing the television cloud photography obtained by meteorological satellites. It includes photographic data acquired by ITOS 1 during the period of October 1, 1970 through December 31, 1970. The maps and listings generally follow the pattern established in the 'Catalog of Meteorological Satellite Data - TIROS I Television Cloud Photography', No. 5.31 in the Environmental Data Service Key to Meteorological Record Documentation series. In this issue, digitized cloud maps replace the manually constructed nephanalyses which had been used in previous catalogs. Two polar stereographic maps are used to show the daily distribution of clouds over the earth, one for the Northern Hemisphere and one for the Southern Hemisphere. These maps are arranged according to pass day. (Author)

COO-1407-6/GA PC$13.25/MF$1.45
Michigan Univ., Ann Arbor. Dept. Of Meteorology and Oceanography.
DEPOSITION OF ATMOSPHERIC PARTICULATE MATTER BY CONVECTIVE STORMS: THE ROLE OF THE CONVECTIVE UPDRAFT AS AN INPUT MECHANISM.
D. F. Gatz. Mar 66, 228p
Contract AT(11-1)-1407

Descriptors: (*Earth atmosphere, *Particles), (*Convection, Particles), Rain, Turbulence.

For abstract, see NSA 28 05, number 12540.

E73-11062/GA PC$3.00/MF$1.45
Kansas Univ./Center for Research, Inc., Lawrence. Remote Sensing Lab.
PRELIMINARY REPORT ON SKYLAB S-193 RADSCAT MEASUREMENTS OF HURRICANE AVA: ADVANCE REPORT OF SIGNIFICANT EVENTS,
Willard J. Pierson, Richard K. Moore, Vincent J. Cardone, and James D. Young. Oct 73, 18p KU-RSL-254-1 NASA-CR-135518
Contract NAS9-13642
Prepared in cooperation with City Univ. of New York, N. Y. Rept. no. CUNY-U10-23.

Descriptors: Microwave radiometers, Scatterometers, Hurricanes, Pacific Ocean, EREP, Skylab program, Oceanography, Wind velocity.

The author has identified the following significant results. The Skylab RADSCAT instrument S-193 was operated on 6 June 1973 while the spacecraft few past Hurricane Ava in the eastern Pacific Ocean. Scatterometer returns at all polarizations and radiometer measurements were obtained from a section through the storm with winds up to 48 knots at 52 deg incident angle and 35 knots at 45.5 deg incident angle. These first hurricane scatterometer measurements indicate reasonable correlation between wind speed and backscatter, with the horizontal response much stronger than the vertical response at 52 deg. Each of the sections through the hurricane contains an as yet unexplained dip in cross section at a point 200 to 300 km prior to passing the eye. The response at a point where the radiometer signal's dramatic increase indicates strong rain is also accompanied by strong increase in the backscattered signal. No attempt has been made to make a thorough correlation of radiometric response with wind speed, but the atmospheric contribution to the radiometer signal is quite apparent.

N73-29671/7GA PC$3.25/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
METEOROLOGICAL INTERPRETATIONS OF THE IMAGES FROM NIMBUS 5 ELECTRICALLY SCANNED MICROWAVE RADIOMETER.
T. Wilheit, J. Theon, W. Shenk, and L. Allison. Jun 73, 25p NASA-TM-X-70424, X-651-73-189
Subm-Submitted for Publication.

Descriptors: *Microwave radiometers, *Nimbus 5 satellite, Brightness temperature, Fronts (Meteorology), Precipitation (Meteorology).

For abstract, see STAR 1120

N73-29674/1GA PC$17.00/MF$1.45
McDonnell-Douglas Astronautics Co., Huntington Beach, Calif. Space Sciences Dept.
ZERO-GRAVITY CLOUD PHYSICS LABORATORY: CANDIDATE EXPERIMENTS DEFINITION AND PRELIMINARY CONCEPT STUDIES.
L. R. Eaton, R. V. Greco, and A. B. Hollinden. Jun 73, 299p NASA-CR-129002
Contract NAS8-27861

Descriptors: *Cloud physics, *Payloads, *Space shuttles, *Weightlessness, Control equipment, Gas generators, Laboratories, Meteorology.

For abstract, see STAR 1120

N73-29675/8GA PC$4.50/MF$1.45
National Physical Lab., Teddington (England). Div. of Maritime Science.
ON THE COHERENCE OF GRID-GENERATED TURBULENCE.
J. B. Roberts, and D. Surry. Apr 73, 50p NPL-MAR-SCI-R-108

Descriptors: *Atmospheric models, *Atmospheric turbulence, *Coherence, Atmospheric boundary layer, Dynamic response.

For abstract, see STAR 1120

N73-29676/6GA PC$4.75/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, SURFACE, AUSTRALIA, OCTOBER 1972.
Oct 72, 53p

Descriptors: *Australia, *Climatology, *Meteorological parameters, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

N73-29677/4GA PC$5.00/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, SURFACE, AUSTRALIA, SEPTEMBER 1972.
Sep 72, 58p

Descriptors: *Australia, *Climatology, *Meteorological parameters, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

N73-29678/2GA PC$3.00/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, UPPER AIR, AUSTRALIA, OCTOBER 1972.
1973, 17p

Descriptors: *Australia, *Climatology, *Lower atmosphere, *Meteorological parameters, *Upper atmosphere, Atmospheric pressure, Atmospheric temperature, Geopotential, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

N73-29679/0GA PC$3.00/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, UPPER AIR, AUSTRALIA, DECEMBER 1972.
1973, 17p

Descriptors: *Australia, *Climatology, *Lower atmosphere, *Meteorological parameters, *Upper atmosphere, Atmospheric pressure, Atmospheric temperature, Geopotential, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

N73-29680/8GA PC$3.25/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, UPPER AIR, AUSTRALIA, SEPTEMBER 1972.
1973, 24p

Descriptors: *Australia, *Climatology, *Lower atmosphere, *Meteorological parameters, *Upper atmosphere, Atmospheric pressure, Atmospheric temperature, Geopotential, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

N73-29681/6GA PC$3.00/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, UPPER AIR, AUSTRALIA, NOVEMBER 1972.
1973, 18p

Descriptors: *Australia, *Climatology, *Lower atmosphere, *Meteorological parameters, *Upper atmosphere, Atmospheric pressure, Atmospheric temperature, Geopotential, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

N73-29682/4GA PC$5.25/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, SURFACE, AUSTRALIA, NOVEMBER 1972.
1973, 62p

Descriptors: *Australia, *Climatology, *Meteorological parameters, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

N73-29683/2GA PC$11.75/MF$1.45
Danish Meteorological Inst., Charlottenlund.
METEORLOGICAL YEARBOOK, PART 1: DENMARK AND FAROE ISLANDS (EXCEPT GREENLAND), 1968.
1973, 193p
In Danish and English.

Descriptors: *Denmark, *Meteorological parameters, *Tables (Data), Graphs (Charts), Handbooks, Maps.

For abstract, see STAR 1120

N73-29684/0GA PC$4.75/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, SURFACE, AUSTRALIA, DECEMBER 1972.
1973, 54p

Descriptors: *Australia, *Climatology, *Meteorological parameters, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

N73-29685/7GA PC$4.75/MF$1.45
Bureau of Meteorology, Canberra (Australia).
MONTHLY CLIMATE DATA, SURFACE, AUSTRALIA, JANUARY 1973.
Jan 73, 54p

Descriptors: *Australia, *Climatology, *Meteorological parameters, Tables (Data), Weather forecasting.

For abstract, see STAR 1120

PATENT-3 715 748/GA Not available NTIS
Department of the Navy Washington D C
METHOD AND APPARATUS FOR MEASURING THE INTENSITY OF ATMOSPHERIC TURBULENCE.
Patent,
John J. Jocks. Filed 30 Apr 71, patented 6 Feb 73, 5p Rept nos. PAT-APPL-139 069,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Meteorological radar, *Patents), Atmospheric motion, Intensity, Measurement, Clear air turbulence, Microwave equipment.
Identifiers: PAT-CL-343-5-W.

The patent describes a method and apparatus for measuring, with radar, the intensity of atmospheric turbulence and/or distinguishing between the radar reflections from clear air turbulence and those produced either by clouds or by the occurrence of a large vertical gradient in radar refractivity. Two or more conventional microwave radars operated simultaneously at different preselected frequencies, transmit and receive reflected energy from a selected atmospheric volume. The received signals are processed to obtain a comparison of the signal amplitudes or intensities from the radars and the data derived from this comparison is used to indicate the intensity of detected clear air turbulence and to distinguish such turbulence from other atmospheric phenomena; e.g., clouds, etc. which also produce radar reflections.

PB-223 696/6GA PC$6.25/MF$1.45
Colorado Univ., Boulder. Inst. of Arctic and Alpine Research.
SHORT-TERM AIR-SEA INTERACTIONS AND SURFACE EFFECTS IN THE BAFFIN BAY-DAVIS STRAIN REGION FROM SATELLITE OBSERVATIONS.
Final rept. Mar 71-Oct 72,
J. D. Jacobs, R. G. Barry, B. Stankov, and J. Williams. Oct 72, 82p INSTAAR-OP-4-1972, Occasional Paper-4
Grant NSF-GV-28220

Descriptors: (*Air water interactions, Baffin Bay), (*Climatology, *Arctic regions), Davis Strait, Energy transfer, Atmospheric temperature, Humidity, Meteorological satellites, Remote sensing.

A study of meteorological satellite data was undertaken for purposes of calculating surface energy budgets in relation to synoptic-term events in the Baffin Bay--Davis Strait region. Visual and infrared imagery, infrared temperature maps, satellite derived atmospheric temperature and humidity profiles, and conventional synoptic data were used to determine exchange rates for selected days in June, July, and August, 1970. An evaluation was made of presently available satellite data in comparison with surface and airborne measurements in the region. While problems remain in the satellite data interpretation and in the simplified energy budget model used, it is demonstrated that assessments of short-term (daily) variations in surface fluxes are possible using this approach. Continuing field investigations and improved satellite coverage will permit an extension of this work in developing a synoptic energy budget climatology for this important sector of the Arctic. (Author)

PB-223 767/5GA PC$4.25/MF$1.45
National Center for Atmospheric Research, Boulder, Colo.
PHOTOGRAPHY OF AIRBORNE ATMOSPHERIC HYDROMETEORS IN SITU FROM A SAILPLANE
Final rept.,
Theodore W. Cannon. 24 Sep 73, 44p NSF-73-64-C-760
Contract NSF-C760

Descriptors: (*Precipitation(Meteorology), Aerial photography), Cloud physics, Aerial cameras, Ice formation indicators, Meteorological instruments, Raindrops, Ice formation, Particle size distribution.

A special camera has been installed on a research sailplane to take in situ photographs of atmospheric hydrometeors. Ice particle shapes, sizes, and concentrations; raindrop sized and concentrations; and estimates of cloud droplet concentrations and maximum sizes are obtained from the photographs. The camera is capable of photographing transparent particles as small as about 1.5 um radius; the size of the largest particle which would be completely imaged is limited by the 24 x 36 mm area photographed. Techniques are described for calibrating the camera so that both in-focus and out-of-focus images are used for determining concentrations and sizes.

PB-223 909/3GA PC$3.75/MF$1.45
Minnesota Univ., St. Paul. Dept. of Soil Science.
A REPORT ON FIELD RESEARCH IN SOILS,
D. G. Baker. Mar 73, 32p Soil Ser-89 W73-14763, OWRR-B-068-MINN(1)
Contract DI-14-31-0001-3901

Descriptors: (*Climate, *Minnesota), (*Soil water, Research), Tables(Data), Precipitation(Meteorology), Plant growth, Atmospheric temperature.

The year 1972 shall long be remembered as one of the coldest years, a summer with many flash floods and a month without the sun. The year was the coldest since 1917; Minneapolis-St. Paul mean temperature in 1917 was 40.6 degrees and for 1972 - 41.3 degrees. Flash floods ocurred in every month from May through September. The month of November received the least amount of sunshine of any month since sunshine records began. Yet the year can be classified as a quiet and peaceful year with respect to severe storms. There were only five tornadoes, compared with the normal of 17 per year, and all five were weak and caused little damage. Also there were less than the average number of damaging hail, wind and snow storms during the year.

PB-224 193/3GA MF$1.45
National Academy of Sciences, Washington, D.C.
WEATHER AND CLIMATE MODIFICATION: PROBLEMS AND PROGRESS.
Jun 73, 275p
International Standard Book No. 0-309-02121-9.
Paper copy available from National Academy of Sciences, Washington, D.C. $6.50.

Descriptors: (*Weather modification, Reviews), Artificial precipitation, Fog dispersal, Storms, Cloud seeding, Hail, Experimental design.

The report not only emphasizes outstanding problems but also reviews recent work on the artificial modification of precipitation, the dissipation of fogs, and the modification of hailstorms, hurricanes, and other weather hazards. It also considers the important role of statistics in meeting requirements for better experimental designs and more relevant techniques for data analysis. In discussing national goals for the next decade the report proposes that research on precipitation modification be completed, technology required to mitigate severe storms be developed, and a program be established to determine the extent of inadvertent modification of local weather and global climate as a result of human activities.

UCRL-74249/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
ATMOSPHERIC MODELING AND ENVIRONMENTAL PROTECTION NEEDS.
J. B. Knox. 9 Oct 72, 16p CONF-721002-3

Descriptors: (*Meteorology, *Research programs), (*Air pollution, *Mathematical models), Data acquisition systems, Environment, Hydrodynamics, Us aec, Us organizations.

For abstract, see NSA 28 04, number 08204.

UCRL-74265/GA PC$3.50/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
MASS-CONSISTENT WIND FIELD MODEL FOR THE SAN FRANCISCO BAY AREA.
M. H. Dickerson. 23 Apr 73, 27p CONF-730528-1

Descriptors: (*San francisco bay, Meteorology), (*Meteorology, *Mathematical models), Air pollution, Geography, Trajectories, Turbulence, Wind.

For abstract, see NSA 28 06, number 15169.

WASH-1217/GA PC$5.45/MF$1.45
Division of Biomedical and Environmental Research, Washington, D. C.
CHEMIST--METEOROLOGIST WORKSHOP, FT. LAUDERDALE, FLORIDA, JANUARY 1972.
1972, 64p

Descriptors: (*Meteorology, *Meetings), (*Aerosols, Meetings), (*Air pollution, Meetings), (*Chemical analysis, Meetings), Diffusion, Quantitative chemical analysis, Trace amounts, Transport, Fission products, Impurities, Radioisotopes, Radionuclide migration, Sampling, Stratosphere, Air, Hydrosphere, Interactions, Water, Biosphere, Earth atmosphere, Gases, Troposphere, Surfaces.

For abstract, see NSA 28 04, number 08205.

5. BEHAVIORAL AND SOCIAL SCIENCES

5A. Administration and Management

AD-768 013/5GA PC$3.50/MF$1.45
Rand Corp Santa Monica Calif
A PROGRAM BUDGETING COST MODEL FOR SCHOOL DISTRICT PLANNING,
Laurence A. Dougharty, Hal E. Boren, Jr., Sue A. Haggart, Gil S. Levenson, and Gerald C. Sumner. Jan 73, 71p* Rept no. P-4953

Descriptors: (*Education, *Management planning), (*Budgets, Mathematical models), Costs, Statistical data, Effectiveness, Classification.
Identifiers: School districts, Management information systems.

Many school districts have adopted some of the accounting mechanics of a planning, programming and budgeting system (PPB), but in the majority of cases the program planning aspect of PPB has not been a feature of the effort. Of the many hypotheses concerning why there has been a dearth of analysis-based decisionmaking, one is that the information system is not yielding the type of information needed for analysis. The paper reports on the development and construction of an education program cost model that is designed to serve as that tool in filling the data gap in program cost information.

AD-768 064/8GA PC$3.75/MF$1.45
George Washington Univ Washington D C
FEDERAL TECHNOLOGY TRANSFER,
Todd Anuskiewicz. Aug 73, 73p

Prepared in cooperation with Naval Ordnance Lab. and American Univ., Washington, D. C. and National Technical Information Service, Springfield, Va. Sponsored in part by National Science Foundation, Washington, D.C. Previously announced as PB-222 483.

Descriptors: (*Scientific research, *Federal budgets), (*Research program administration, Reviews), Management planning, Defense systems, Civil engineering, Classification, Organizations, Predictions.
Identifiers: *Transfer of technology, Research utilization, Research and development.

Scientific research and development accounts for some $28 billion worth of goods and services in the U.S. More than half of this enterprise is paid for by the Federal government. Despite this large Federal investment in R + D, there have been, until recently, only sporadic efforts to achieve fruitful technology transfer to and utilization by industry and the larger national community. However, during the last few years, new interest in the value of technology transfer has been signalled by several major studies. The report offers a survey of current Federal technology transfer and research utilization activities.

AD-768 080/4GA PC$2.75/MF$1.45
Rand Corp Santa Monica Calif
FEDERAL REVENUE SHARING: VARIATIONS ON THE THEME 'INNER CITY BLUES',
Nicki King. Apr 73, 22p* Rept no. P-4994

Descriptors: (*Federal budgets, *Public relations), (*Sociometrics, *Urban areas), Reviews, Transformations, Impact, Economics, Problem solving.
Identifiers: *Revenue sharing, Antidiscrimination legislation, Government policies, Ethnic groups.

The nation is in the midst of a period of many policy changes. What these policies are aimed at and how they will affect the American people in the long run will be subjects for speculation for some time to come. The purpose of this paper is to examine one area of a new policy--redistribution to local governments of federal funds, called revenue sharing--and to speculate on the impacts of its implementation on a specific segment of the population--the Black community.

AD-768 104/2GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
HERESIES ABOUT TIME: WASTED TIME, DOUBLE-DUTY TIME, AND PAST TIME,
Charles Wolf, Jr. Apr 73, 13p Rept no. P-5005

Descriptors: (*Time, *Industrial relations), Classification, Economics, Efficiency, Statistical analysis, Mathematical models.
Identifiers: Wasted time, Double duty time, Elapsed time.

A framework which makes the allocation of time between such areas as household and market, production and consumption, and use and maintenance a new and central economic issue opens up new lines of inquiry in decisionmaking. The report is concerned with three types: wasted time, double-duty time, past time. These are defined and discussed.

AD-768 111/7GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
AN INCENTIVE PLAN FOR INSPECTORS BASED ON LINEAR INDIFFERENCE,
Larry O. Whitt, and Joseph W. Foster. Jul 72, 80p Rept no. USAMC-ITC-2-72-11

Descriptors: (*Quality control, Costs), (*Wages, Quality control), Management planning, Sampling, Acceptability, Errors, Computer programs.
Identifiers: *Incentive plans, *Indifference curves, *Salary administration, Incentives, FORTRAN.

The United States Army Materiel Command, as is any responsible organization is interested in controlling and reducing inspection related costs. The indifference incentive payment plan for inspectors presented in this paper is applicable to many inspection situations associated with inspection of high volume-low value items produced by government owned-government operated facilities and to inspection situations associated with rebuild and maintenance programs on depots. The productivity and accuracy of human inspectors vary from day-to-day and from item-to-item; the plan presented in this paper allows the Army to control the costs associated with these variations by paying the inspectors a wage commensurate with their performance to offset these cost variations.

AD-768 129/9GA PC$6.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
REDUCING LIFE CYCLE COSTS BY OPTIMIZING THE PRODUCTION-INVENTORY MODEL FOR SPARE PARTS,
John E. Peer. May 73, 91p Rept no. USAMC-ITC-1-73-14

Descriptors: (*Space parts, *Inventory control), (*Production control, Space parts), Costs, Mathematical models, Stochastic processes, Life expectancy, Computer programs, Optimization.

The objective of the paper is to reduce the life cycle cost of a system/equipment by reducing the production and inventory costs of spare parts. Two methods are developed to minimize the production and inventory costs. The first method allows for production of spare parts every t time units during the life of the system/equipment. Demand is considered probabilistic and based on the failure rate of a spare part. The inventory model seeks to minimize total cost by optimizing the length of the scheduling period and the order level. In the second method, production of spare parts occurs only once at the time the system/e uipment is field. Demand is considered probabilistic with the lifetime of the equipment known. For this case the number of spares to place in inventory must be determined so that the risk associated with not having a spare is minimized. (Author)

AD-768 139/8GA PC$5.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
PRICING AND INVENTORY POLICIES,
James David Finley. Jul 72, 72p Rept no. USAMC-ITC-2-73-03

Descriptors: (*Inventory control, Optimization), Industrial production, Management planning, Economics, Mathematical models.
Identifiers: *Profits, Prices, Demand(Economics).

The purpose of the research was to explore the feasibility of using profit rather than cost as the criteria for solving several traditional inventory systems. The motivation for profit optimization is basic to theory of the firm. The underlying equation for this research is: Profit = Sales - Costs. The costs considered are exclusively those associated with inventory. Sales is considered a linear or quadratic function of price. In deciding whether this approach was feasible, three inventory systems were examined; economic lot-size, economic order-level, and economic order-level - lot-size systems. (Modified author abstract)

AD-768 143/0GA PC$4.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
TWO CONSTRAINED INVENTORY MODELS,
Merlin L. Erickson. Jul 71, 55p Rept no. USAMC-ITC-2-71-02

Descriptors: (*Inventory control, Mathematical models), Scheduling, Lead time, Costs.
Identifiers: Constraints, Demand(Economics).

The paper presents two types of n product constrained inventory models, one lot-size and the other order-level. The constraints which are imposed on these models limit the amount of space occupied by the products at any time. Solutions are obtained for the lot-size systems which have two, three, and n products. The lot-size model is contained in chapter 3. A solution is obtained in the two product case for the order-level system. The problems involved in determining an n product solution for this system are discussed. Chapter 4 contains the consideration of this model. Chapter 5 concludes this paper with a summary of the results of the research and recommendations for future research in the area of constrained inventory systems. (Author)

AD-768 146/3GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
FAULT TREE ANALYSIS AS A MANAGERIAL TOOL FOR PRODUCTION LOSS CONTROL,
Joseph H. Zarzycki. Jul 71, 79p Rept no. USAMC-ITC-2-71-14

Descriptors: (*Production control, Management planning), Mathematical logic, Reliability, Probability, Statistical analysis.
Identifiers: *Fault tree analysis, Boolean algebra, Downtime.

The objective of the paper was to show that fault tree analysis is a technique which can be useful to management in analyzing production systems. The fault tree was demonstrated to be a valuable means for gaining the information necessary to reduce the likelihood of a financial loss resulting from the occurrence of an undesired event. It was shown that there is a good reason to take fault tree analysis out of its systems safety context and to place it also into the area of production analysis where it can be utilized as a tool for controlling losses due to production interruptions. (Author)

AD-768 148/9GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
INCENTIVE CONTRACTING BASED ON RELIABILITY AND CONSUMER INDIFFERENCE,
Bryan W. Butler, and Joseph W. Foster. Jul 71, 78p Rept no. USAMC-ITC-2-71-19

Descriptors: (*Contracts, Management engineering), Reliability, Maintainability, Costs, Statistical analysis, Computer programs.
Identifiers: *Contract administration, *Incentive contracts, Indifference curves.

The paper presents two different incentive contracting plans which use the concept of life-cycle-costing and systems worth. One plan is based on the assumption of an exponential failure rate and uses this as a basis for determining systems worth. The other plan assumes no underlying failure rate distribution and uses nonparametric testing procedures for determining product reliability. Both plans use the concept of consumer indifference by adjusting the purchase price according to the product reliability as determined by field test. (Author)

AD-768 174/5GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
A PRELIMINARY STUDY OF OPTIMAL CONTROL APPLIED TO INSPECTION, REWORK AND INVENTORY OPERATIONS,
Daniel Raymond Turk. Jul 71, 79p Rept no. USAMC-ITC-2-71-13

Descriptors: (*Management planning, Decision making), Inventory control, Quality control, Mathematical models, Statistical analysis, Matrix algebra, Optimization.
Identifiers: Control theory, Automatic control.

The major achievement of this research is the structuring of middle management decision making problems as an optimal control problem for a dynamical process. A combined quality assurance and inventory department is hypothesized for the process and typical management decisions are included as components of the control vector. Final value boundary conditions for target work force and inventory levels are assumed to be periodically furnished by upper echelon management. Initial values are assumed known. The criterion function is the sum over the planning horizon of weighted cost functions of state and control variables. Observation of the plant dynamics and resulting control actions occur at uniform discrete sampling intervals. The solution for the optimum control vectors is assumed to be computed by an on-line computer-controller in accordance with discrete maximum principle for synchronous sampling. As a result of the study, general steps are outlined for process identification by state variable methods and for approaches to the problem of optimal adaptive control. (Author)

AD-768 181/0GA PC$6.25/MF$1.45
Texas A and M Univ College Station
APPLICATION OF THE MENTO-FACTOR SYSTEM AND PREDETERMINED MOTION TIME STUDY TO ESTIMATE REPAIR TIMES FOR MAINTAINABILITY PREDICTIONS.
Research rept.,
Timothy J. Bailey. Mar 72, 83p
Master's thesis.

Descriptors: (*Maintainability, Mathematical prediction), (*Management planning, Maintainability), Malfunctions, Time studies, Statistical tests, Experimental design.
Identifiers: Chi square test, Downtime, PERT.

The paper attempts to standardize repair time predictions by introducing a new technique for making these estimations. This technique utilizes the predetermined motion time system Work-Factor and also Mento-factor which is a predetermined time system that estimates times necessary for mental activities. The repair time analysis was done by the Wofac Company, which developed both of these prediction systems. Experimental apparatus was designed to simulate a system with semi-automatic built-in test equipment. The experimental subjects used were completely unfamiliar with the equipment. They were required to simulate repairs by following a repair procedure in the accompanying maintenance manual for the system. The validity of the theoretical times was statistically determined by comparisons with the experimental times. This was done to verify the utilization of this new prediction technique in maintainability applications. (Author)

COM-73-11569/3GA PC$4.50/MF$1.45
IIT Research Inst., Chicago, Ill.
COMMERCIAL UTILIZATION OF GOVERNMENT-HELD PATENTS.
Final rept., 1 Aug 72-31 Jul 73,
Henry G. DeYoung. 31 Aug 73, 46p IITRI-V6131-5-Vol-1
Contract C-2-36739
See also Volume 2, COM-73-11570.

Descriptors: (*Patents, Utilization), (*Industrial readiness, Appraisals), Methodology, Selection, Economic analysis, Transfer of technology, Effectiveness, Recommendations, Reviews, Information systems.
Identifiers: Screening methods, Government owned patents, Management information systems.

The report discusses the operational features of a unique patent screening process. The process is useful in the identification of new government generated technology and to rate individual patents on the basis of commercial usefulness, cross-disciplinary possibilities, and economic potential. Nearly 900 government patents were evaluated under this program with 29% exhibiting significant economic and technological potential in non-government areas.

COM-73-11570/1GA PC$5.00/MF$1.45
ITT Research Inst., Chicago, Ill.
A SPECIAL PROJECT TO TEST THE USE OF AN OPERATING PROCEDURE FOR SCREENING PATENTS.
Final rept., 1 Aug 72 - 31 Jul 73,
Sallie A. Lambert. 31 Aug 73, 57p IITRI-V6131-5-Vol-2
Contract C-2-36739
See also Volume 1, COM-73-11569.

Descriptors: (*Patents, Utilization), (*Industrial readiness, Acceptability), (*Appraisals, Effectiveness), Selection, Rejection, Reviews, Sampling, Criteria, Recommendations, Information systems.
Identifiers: Technology utilization, Screening methods, Management information systems.

The report discusses an operating procedure used to screen a selected sample of government and industrial patents with a known background of commercial success or failure covering a wide range of technologies. The objective was to determine whether screening with the operating procedure would result in acceptance, rejection, or more thorough and accurate evaluations.

COM-73-50839/2GA PC-GPO/MF$1.45-NTIS
National Bureau of Standards, Washington, D.C. Standards Information Services.
AN INDEX OF STATE SPECIFICATIONS AND STANDARDS.
Special publication,
Linda L. Grossnickle. Sep 73, 394p NBS-SP-375
Paper copy available from GPO $3.70 as stock no. 0303-01084, C13.10:375.

Descriptors: (*State government, Purchasing), (*Purchasing, Standards), (*Government procurement, Specifications), Indexes(Documentation), Classifications, Subject indexing, Materials, Equipment, Fuels, Machinery, Electric appliances, Instruments, Chemical compounds, Clothing, Vehicles, Systems, Tools, Fittings, Furniture, Cleaners, Finishes.
Identifiers: *Commodities.

A computer-produced index contains the permuted titles of more than 6,000 state purchasing specifications and standards issued by 37 state purchasing offices thru 1971. The title of each specification and standard can be found under all the significant key words which it contains. These key words are arranged alphabetically down the center of each page together with their surrounding context. The data of publication or latest revision, the specification or standard number, and an abbreviation for each state appear as part of each entry. A list of abbreviations and the names and addresses of the state purchasing officials are also included.

LA-5248/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
PLAN2: A RECEIPTS AND DISBURSEMENTS CODE FOR PREPARING R AND D OPERATING PLANS.
D. R. Harris. May 73, 12p
Contract W-7405-eng-36

Descriptors: (*Management, Computer codes), (*Computer codes, *P codes), Cdc computers, Cost, Fortran, Planning, Research programs, Univac computers.

For abstract, see NSA 28 06, number 15039.

PB-223 929/1GA PC$5.50/MF$1.45
Cornell Univ., Ithaca, N.Y. Water Resources and Marine Sciences Center.
THE FORMULATION OF AN OUTDOOR RECREATION SUPPLY FUNCTION.
Partial research project technical completion rept., Eckhart Dersch. 1973, 212p OWRR-B-002-NY(7), W73-14768
Contract DI-14-01-0001-823

Descriptors: (*Recreation, *Management planning), (*Regional planning, *New York), Supply(Economics), Decision making, Models, Optimization, Natural resources, Standards, Capacity, Land use, Water resources.
Identifiers: Outdoor recreation, Supply functions, Broome County(New York), Whitney Point(New York).

A recreation supply function, a tool to assist planners in making long term decisions is formulated. Using this tool the capacity of a natural resource to support a range of recreational activities is determined and an optimal development strategy for the area is devised. The case study was done on the Whitney Point Reservoir Area in Broome County, New York. The recreation resource base, recreation standards, natural features and the recreation use capacities of this area were investigated.

PB-223 994/5GA PC$3.50/MF$1.45
Georgia Science and Technology Commission, Atlanta.
GEORGIA RESEARCH PRIORITIES STUDY.
Final rept. Jul 72-Jul 73,
John E. Mock. 31 Jul 73, 27p
Grant NSF-GT-33307
Prepared by the Governor's Science Advisory Council, Atlanta, Georgia.

Descriptors: (*Economic development, *Georgia), (*Resources, Georgia), (*Research, Utilization), Projects, Scheduling, State government, Management planning, Problem solving, Recommendations, Federal budgets, Cooperation, Organizing, Reviews.
Identifiers: Research priorities, Research utilization, Federal state relations, Technological resources.

The final project report is made on the Georgia Research Priorities Study which was initiated as a first step in helping the state of Georgia make better use of its scientific and technological resources. The report provides project objectives, scope of work, methods and procedures in carrying out the project summary and findings of the study, and evaluation of the project.

PB-224 046/3GA PC$4.50/MF$1.45
California Assembly Office of Research, Sacramento.
THE ASSEMBLY SCIENCE AND TECHNOLOGY ADVISORY COUNCIL: BACKGROUND AND EVALUATION.
Final rept. Jan 70-May 73,
Frederick G. Styles. May 73, 135p* AOR-8
Grant NSF-GT-6

Descriptors: (*Research, Utilization), (*Scientific societies, *California), State government, Counselling, Management planning, Energy, Population growth, Waste disposal, Public health, Employment, Environmental engineering.
Identifiers: Solid wastes, Health care, Technological development, Research utilization.

The report evaluates the structure and operation of the California Assembly's Science and Technology Adivsory Council since its establishment in January 1970. It sets forth conclusions and recommendations for continued operation under the direction of the Assembly Office of Research.

PB-224 097/6GA PC$4.50/MF$1.45
Metropolitan Washington Council of Governments, D.C.
OPTIMUM GROWTH STUDIES FOR THE METROPOLITAN WASHINGTON AREA. III. PLANNING AND MANAGEMENT SYSTEMS.
Final rept.,
Robert C. Einsweiler. Aug 73, 47p

Prepared by Robert C. Einsweiler, Inc., Minneapolis, Minn. See also PB-224 095.

Descriptors: (*Urban development, *District of Columbia), (*Regional planning, Optimization), (*Management planning, *Systems analysis), Information systems, Land development, Public administration, Investments, Taxes, Financing, Decision making, Participative management, Constraints, Recommendations.
Identifiers: Management information systems, Side effects, Washington metropolitan area, Legal restraints, Political choices.

One of three consultant reports on optimum growth sets forth a concept of development management systems for urban areas. It examines various considerations in setting up planning and management systems. The scope includes direct land development controls, public capital investments, taxes and fees, information systems, and other decision guides. The last part applies some of the views to the Washington metropolitan area and a review of the Year 2000 Plan.

PB-224 114/9GA PC$5.25/MF$1.45
Oregon State Executive Dept., Salem. Local Government Relations Div.
A-95 AND HUD-NINETEEN-DAY REVIEWS IN OREGON: ANALYSIS AND RECOMMENDATIONS.
Final rept. Jun-Nov 72,
Dennis L. West. 15 Nov 72, 63p

Descriptors: (*Regional planning, Evaluation), (*Project planning, *Oregon), Reviews, Recommendations, Organizations, Urban areas, Rural areas.
Identifiers: A-95 reviews, Project notification and review system, Counties.

The report focuses on the A-95 review process (PNRS) and HUD nineteen-day reviews as they are used in the state of Oregon. Section 1 attempts to put both programs anto a statewide perspective. Section 2 is directed at examples of the achievements of A-95 reviews up to the present. Section 3 contains a range of suggestions for improving PNRS and HUD nineteen-day review utilization at all levels in the state.

PB-224 118/0GA PC$8.25/MF$1.45
Oregon State Executive Dept., Salem. Local Government Relations Div.
SUB-STATE REGIONALISM IN OREGON. SUMMARY REPORTS DISTRICT COUNCIL ACTIVITIES/LAW ENFORCEMENT PLANNING.
Final rept. Jun 72-Feb 73.
Feb 73, 125p LGR-72-15-13

Descriptors: (*Local government, *Management planning), (*Regional planning, *Oregon), Organizations, Project planning, Classifications, Reviews, Problem solving, Recommendations, Law enforcement, Financing, Information systems.
Identifiers: Management information systems, Councils of government.

As a companion report to the final document Sub-State Regionalism in Oregon - State Administrative Districts/Local Councils of Government, the binder contains much of the field research gathered in Oregon during 1972. Material has been organized by each administrative district and presents a summary of the organization, program, and operating characteristics of each of the district planning organizations. A second aspect of the report presents summary comments on law enforcement planning.

PB-224 124/8GA PC$4.75/MF$1.45
Environmental Protection Agency, Cincinnati, Ohio. Office of Water Program Operations.
ORGANIZATION AND MANAGEMENT OF TECHNICAL MEETINGS AND SEMINARS,
H. W. Jackson. Jan 73, 51p EPA-430/1-73-001

Descriptors: (*Meetings, *Organizing), (*Management planning, Meetings), Objectives, Lead time, Scheduling, Visual aids, Documents, Facilities, Optimization, Leadership, Services, Public address systems, Information systems.
Identifiers: Technical meetings, Seminars, Agenda, Management information systems.

The document describes all the arrangements necessary for organizing and conducting a technical meeting or a seminar. The role of speakers, general chairmen, technical assistants, and manager are covered in detail. Included are useful checklists and examples of forms used in past seminars.

PB-224 219/6GA PC$6.25/MF$1.45
National Swedish Inst. for Building Research, Stockholm.
PHYSICAL, SOCIO-ECONOMIC AND ENVIRONMENTAL PLANNING IN COUNTRIES OF EASTERN EUROPE.
Building research,
Jaromir Stvan. 1973, 85p D4:1973
Paper copy also available from: Svensk Byggtjanst, Box 1403, S-11184 Stockholm (Sweden). Price: Sw. Kr. 19.

Descriptors: (*Planning, *Eastern Europe), Urban planning, Environmental engineering, Socioeconomic status, Policies, Land use, Econometrics, Culture(Social sciences), Research, Reviews.
Identifiers: *Socioeconomic planning, *Physical planning.

The study analyses the relationships between physical, socio-economic and environmental planning, as they emerge from the various planning activities in the countries of Eastern Europe. Among the many possible approaches to the above interactions the study has deliberately been restricted so as to single out the position of physical planning at the city and city sub-area levels. Special attention has been devoted to the influences to which investment in housing and infrastructures is exposed.

UCRL-51378/GA PC$5.45/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
CPM: A PROGRAM FOR CRITICAL PATH MANAGEMENT.
J. R. McCall. 9 Apr 73, 53p
Contract W-7405-Eng-48

Descriptors: (*Management, *Research programs), (*Computer codes, *C codes), Algorithms, Cost, Planning.

For abstract, see NSA 28 06, number 15041.

5B. Documentation and Information Technology

AD-767 765/1GA PC$3.75/MF$1.45
Defence Research Information Centre Orpington (England)
DRIC LIBRARY BULLETIN. NUMBER 7, 1973.
1973, 32p
See also AD-762 761.

Descriptors: (*Scientific research, *Abstracts), (*Libraries, *Great Britain), Indexes, Periodicals, Information retrieval, Management engineering, Defense systems, Linguistics.
Identifiers: Announcement bulletins, Reprography.

The bulletin announces selected references to current periodical literature covering the fields of information science and technology, management, reprographic systems and some computer topics considered to be of interest to the Ministry of Defense activities. The bulletin also carries an accession list of books.

AD-767 766/9GA PC$3.25/MF$1.45
Defence Research Information Centre Orpington (England)
DRIC LIBRARY BULLETIN. NUMBER 9, 1973.
1973, 23p
See also AD-766 774.

Descriptors: (*Scientific research, *Abstracts), (*Libraries, *Great Britain), Indexes, Periodicals, Information retrieval, Management engineering, Defense systems, Linguistics.
Identifiers: Announcement bulletins, Reprography.

The bulletin announces selected references to current periodical literature covering the fields of information science and technology, management, reprographic systems and some computer topics considered to be of interest to the Ministry of Defense activities. The bulletin also carries an accession list of books.

AD-767 905/3GA PC$3.00/MF$1.45
Defence Scientific Information Service Ottawa (Ontario)
DSIS STANDARD FOR THE CATALOGING OF SCIENTIFIC AND TECHNICAL REPORTS. VOLUME 2. ANALYTIC CATALOGING.
Jul 73, 50p* Rept no. DSIS-R-4
See also Volume 1 dated Sep 71, AD-730 936.

Descriptors: (*Documentation, *Standards), (*Subject indexing, Standards), Abstracts, Indexes, Reports, Canada.
Identifiers: *Subject index terms, Technical reports.

The standard has been prepared by DSIS to provide rules for cataloging scientific and technical reports. The purpose of the standard is to produce practical uniformity of cataloging and to provide users with a consistent form of citation and index entries. The analytic elements described in this volume include the abstract, subject headings, subject code (COSATI) numbers and subject keywords. Subject headings are of two types: TEST descriptors and DSIS descriptors. The rules governing the selection of terms for these lists are taken from the Thesaurus of Engineering and Scientific Terms compiled by the US Department of Defense for TEST descriptors and from the DSIS Subject Heading List for most DSIS descriptors. (Author)

AD-767 927/7GA PC$9.00/MF$1.45
Naval Research Lab Washington D C
BIBLIOGRAPHY OF UNCLASSIFIED NRL FORMAL REPORTS NUMBERS 5700 TO 6300.
Jan 66, 138p Rept no. NRL-6000B
See also report dated Jul 72, AD-402 910.

Descriptors: (*Naval research, *Reports), Indexes, Alloys, Spacecraft, Submarines, Navigational aids, Aerial reconnaissance, Radioactivity, Meteorology.

Section 1 is a listing, by number, of unclassified NRL formal reports, giving the title, authors, and date of all reports from 5700 to 6300. Section 2 is an alphabetical index of authors, from 1000 to 6300, giving the numbers of reports only. Section 3 is a listing of reports from 1000 to 6300 that have been issued in series. Those reports available from the National Technical Information Service carry a PB or AD number and price.

AD-768 254/5GA PC$4.50/MF$1.45
Royal Aircraft Establishment Farnborough (England)

SWEDISH DEFENCE ABSTRACTS, 72/73-1 (FRO FORSVARS FORSKNINGS REFERAT OPEN DEL 72/73-1).
27 Mar 73, 49p Rept no. RAE-Library Trans-1711
DRIC-BR-36941
Trans. of Forsvarets Forskningsanstalt, Stockholm. Rapport (Sweden) FRO-72/73-1, by F.W. Read. See also AD-768 256.

Descriptors: (*Defense systems, Sweden), Scientific research, Abstracts, Nuclear explosions, Nuclear warfare, Radiation injuries, Biological warfare agents, Chemical warfare agents, Weapon systems, Warfare, Logistics, Great Britain.
Identifiers: Translations.

The Swedish Research Institute for National Defence issues a quarterly list of unclassified Reports published by the Institute. The volume covers the first quarter of 1972/73. Further volumes will be translated in due course. The main topics covered are: Protection - atomic, biological, chemical; ammunition and weapons; conduct of war; information and command; vehicles and spacecraft; reliability and logistics; human factors; associated studies and their solutions.

AD-768 256/0GA PC$3.75/MF$1.45
Royal Aircraft Establishment Farnborough (England)
SWEDISH DEFENCE RESEARCH ABSTRACTS, 71/72-4 (FRO FORSVARS FORSKNINGS REFERAT OPENN DEL 71/72-4).
Jul 73, 33p Rept no. RAE-Library Trans-1693
DRIC-BR-36948
Trans. of Forsvarets Forskingsanstalt, Stockholm. Rapport (Sweden) FRO-71/72-4, by F.W. Read. See also AD-768 254.

Descriptors: (*Defense systems, Sweden), Scientific research, Abstracts, Nuclear explosions, Biological warfare agents, Chemical warfare agents, Weapon systems, Military medicine, Aerial reconnaissance, Navigational aids, Computers, Great Britain.
Identifiers: Translations.

The Swedish Research Institute for National Defence issues a quarterly list of unclassified Reports published by the Institute. The titles of these Reports and informative abstracts have been translated into English. The volume covers the fourth quarter of 1971/72. The main topics covered are: Protection - atomic, biological, chemical; ammunition and weapons; conduct of war; information and command; vehicles and spacecraft; reliability and logistics; human factors; associated studies and their solutions.

AD-768 305/5GA PC$4.25/MF$1.45
Johns Hopkins Univ Silver Spring Md Applied Physics Lab
APPLIED PHYSICS LABORATORY SCIENTIFIC AND GENERAL TECHNOLOGICAL APPLICATIONS, FISCAL YEAR 1972.
30 Jun 72, 116p Rept no. APL/JHU-SGTA-1
Contract N00017-72-C-4401

Descriptors: (*Scientific research, *Reviews), Communication satellites(Active), Spacecraft, Navigational aids, Earth(Planet), Air transportation, Shipping(Marine), Surveillance drones, Air traffic control systems, Ships, Harbors, Water traffic, Medicine, Hospitals.

The report gives a brief overview of the civilian oriented activity of the Applied Physics Laboratory during Fiscal Year 1972. By way of background, civilian oriented projects comprise a relatively small fraction of the total activity of the laboratory, but continue to contribute increasingly to the exploration of the frontiers of science and technology. While these projects are supported by a variety of agencies, many have been made possible by techniques and information developed by the defense related programs that comprise the bulk of the laboratory's activity. Especially notable among these are the space and fleet defense programs. Thus, the space programs have made possible new navigation techniques and also have yielded data from which research studies derive new knowledge of the earth and its environment. Fleet defense programs have developed new techniques for surveillance and vehicle management that have important application to civilian problems, especially those related to aircraft traffic and to ship traffic in congested harbors. (Author)

AD-768 312/1GA PC$4.00/MF$1.45
Air Force Materials Lab Wright-Patterson AFB Ohio
AIR FORCE MATERIALS LABORATORY FY 74 TECHNICAL OBJECTIVE DOCUMENT,
B. Chasman. Apr 73, 38p Rept no. AFML-TR-73-35

Descriptors: (*Materials, Air Force research), Airframes, Composite materials, Thermal insulation, Heat-resistant materials, Coatings, Lubricants, Seals, Armor, Tires, Elastomers, Optical materials, Lasers, Reentry vehicles, Material forming, Joining, Gas turbines, Material removal, Nondestructive testing.
Identifiers: Laser materials.

The Technical Objective Document was prepared by the Air Force Materials Laboratory (AFML) and describes the Materials Technology Planning Objectives (TPO's) for meeting future Air Force operational needs. The six Technology Planning Objectives encompass the full spectrum of materials capabilities required for future aircraft, missile, space and electronic systems, - Thermal Protection Materials; Aerospace Structural Materials; Aerospace Propulsion Materials; Fluid, Lubricant and Elastomeric Materials; Protective Coatings and Materials; Electromagnetic Materials. Presented for each TPO is the general objective, specific goals and technical approaches, and a Laboratory TPO focal point who can facilitate face-to-face discussions with Laboratory engineers and scientists. This report supersedes TOD 71-26. (Author)

COM-73-11470/6GA 16mm microfilm $74.00 or $110.00
Patent Office, Washington, D.C.
CLASSIFICATION OF U.S. PATENTS ISSUED THROUGH JUNE 30, 1973, INCLUDING ALL RECLASSIFICATIONS UP TO JANUARY 1, 1973.
Jun 73,18 16mm microfilm reels or cartridges
Individual reels available for $6.00; individual catridges (specify type) available for $8.00. Microfilm will be updated 4 times a year; orders will be filled with latest update. Supersedes in part issue dated Jan 73, COM-73-10700-SET.
Available in set of 18 16mm microfilm reels or cartridges (specify type): reel, COM-73-11470-P, $74.00; 3M cartridge, COM-73-11470-M, $110.00; Recordak cartridge, COM-73-11470-R, $110.00; or Thread Easy Magazine, COM-73-11470-T, $110.00.

The official microfilm record contains complete classification information for all U.S. patents identified in the title. The record is arranged in Patent Number sequence. Individual reports are also available as follows:

Patent Numbers, AI-2 Through AI-318, D-1 Through D-227,517, PP-1 Through PP-119, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11472/0GA COM-73-11472/0GA
Patent Numbers PP120-PP3,369; RD301-RD19,052; RE2-RE27,689; RX35-RX112, T628,881-T910,010; X1-X9,920; X16,78M-X91,85M; 01-192,199 **COM-73-11473/8GA COM-73-11473/8GA**
Patent Numbers 192,200 Through 420,199, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11474/6GA COM-73-11474/6GA
Patent Numbers 420,200 Through 648,199, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11475/3GA COM-73-11475/3GA
Patent Numbers 648,200 Through 876,199, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11476/1GA COM-73-11476/1GA
Patent Numbers 876,200 Through 1,104,199, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11477/9GA COM-73-11477/9GA
Patent Numbers 1,104,200 Through 1,332,199, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11478/7GA COM-73-11478/7GA
Patent Numbers 1,332,200 Through 1,560,199, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11479/5GA COM-73-11479/5GA
Patent Numbers 1,560,200 Through 1,788,199, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11480/3GA COM-73-11480/3GA
Patent Numbers 1,788,200 Through 2,016,099, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11481/1GA COM-73-11481/1GA
Patent Numbers 2,016,100 Through 2,244, 099, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11482/9GA COM-73-11482/9GA

COM-73-11471/8GA 16mm microfilm $74.00 or $110.00
Patent Office, Washington, D.C.
CLASSIFICATION OF U.S. PATENTS ISSUED THROUGH JUNE 30, 1973, INCLUDING ALL RECLASSIFICATIONS UP TO JANUARY 1, 1973.
Jun 73,18 16mm microfilm reels or cartridges
Individual reels available for $6.00; individual cartridges (specify type) available for $8.00; also available in set of 7 16mm microfilm reels or cartridges (specify type) as COM-73-11471, $30.00 or $44.00. Microfilm will be updated 4 times a year; orders will be filled with latest update. Supersedes in part issue dated Jan 73, COM-73-10719-SET.
Available in set of 18 16mm microfilm reels or cartridges (specify type): reel, COM-73-11470-P, $74.00; 3M cartridge, COM-73-11470-M, $110.00; Recordak cartridge, COM-73-11470-R, $110.00; or Thread Easy Magazine, COM-73-11470-T, $110.00.

The official microfilm record contains complete classification information for all U.S. patents identified in the title. The record is arranged in Patent Number sequence. Individual reports are also available as follows:

Patent Numbers 2,244,100 Through 2,472,099, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11483/7GA COM-73-11483/7GA
Patent Numbers 2,472,100 Through 2,700,099, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11484/5GA COM-73-11484/5GA
Patent Numbers 2,700,100 Through 2,927,999, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11485/2GA COM-73-11485/2GA
Patent Numbers 2,928,000 Through 3,155,199, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11486/0GA COM-73-11486/0GA
Patent Numbers 3,155,200 Through 3,375,699, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11487/8GA COM-73-11487/8GA

COM-73-11471/8GA 16mm microfilm $74.00 or $110.00
Patent Office, Washington, D.C.
CLASSIFICATION OF U.S. PATENTS ISSUED THROUGH JUNE 30, 1973, INCLUDING ALL RECLASSIFICATIONS UP TO JANUARY 1, 1973.
Jun 73,18 16mm microfilm reels or cartridges
Individual reels available for $6.00; individual cartridges (specify type) available for $8.00; also available in set of 7 16mm microfilm reels or cartridges (specify type) as COM-73-11471, $30.00 or $44.00. Microfilm will be updated 4 times a year; orders will be filled with latest update. Supersedes in part issue dated Jan 73, COM-73-10719-SET.
Available in set of 18 16mm microfilm reels or cartridges (specify type): reel, COM-73-11470-P, $74.00; 3M cartridge, COM-73-11470-M, $110.00; Recordak cartridge, COM-73-11470-R, $110.00; or Thread Easy Magazine, COM-73-11470-T, $110.00.

The official microfilm record contains complete classification information for all U.S. patents

identified in the title. The record is arranged in Patent Number sequence. Individual reports are also available as follows:

Patent Numbers 3,375,700 Through 3,597,399, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11488/6GA COM-73-11488/6GA

COM-73-11471/6GA 16mm microfilm $74.00 or $110.00
Patent Office, Washington, D.C.
CLASSIFICATION OF U.S. PATENTS ISSUED THROUGH JUNE 30, 1973, INCLUDING ALL RECLASSIFICATIONS UP TO JANUARY 1, 1973.
Jun 73, 18 16mm microfilm reels or cartridges
Individual reels available for $6.00; individual cartridges (specify type) available for $8.00; also available in set of 7 16mm microfilm reels or cartridges (specify type) as COM-73-11471, $30.00 or $44.00. Microfilm will be updated 4 times a year; orders with latest update. Supersedes in part issue dated Jan 73, COM-73-10719-SET.
Available in set of 18 16mm microfilm reels or cartridges (specify type): reel, COM-73-11470-P, $74.00; 3M cartridge, COM-73-11470-M, $110.00; Recordak cartridge, COM-73-11470-R, $110.00; or Thread Easy Magazine, COM-73-11470-T, $110.00.

The official microfilm record contains complete classification information for all U.S. patents identified in the title. The record is arranged in Patent Number sequence. Individual reports are also available as follows:

Patent Numbers 3,597,400 Through 3,742,516, 1 reel, $6.00, or cartridge (specify) $8.00
COM-73-11489/4GA COM-73-11489/4GA

COM-73-50186-08/GA PC-GPO/MF$1.45-NTIS
National Bureau of Standards, Washington, D.C.
DIMENSIONS/NBS. VOLUME 57, NUMBER 8, AUGUST 1973.
Monthly technical news bull.
Aug 73, 25p NBS/DIM-57/8
Library of Congress Catalog Card no. 25-26527.
Paper copy available from GPO $6.50/year as C13.13:57, $0.65/copy as C13.13:57/8.

Descriptors: (*Periodicals, Research projects), Energy, Household goods, Liquefied natural gas, Motor vehicles, Gasoline, Propane, Cryogenics, Standards, Units of measurement, Nuclear fusion, Exhaust emissions, Flammability testing.
Identifiers: Technical news bulletins, National Bureau of Standards.

The monthly magazine features short summaries of major technical developments, highlights of work in progress, major speeches and statements by Bureau management, and a listing of NBS publications. The table of contents for the current issue is the following: To our readers; Energy and NBS; Energy Conservation in buildings; Household appliance energy labels; Energy generation and transmission; Liquefied natural gas and NBS; Comparative performance of motor vehicles operated on gasoline, compressed natural gas, and propane; Three states receive weights and measures standards; Current awareness in cryogenics; Atomic data aid U. S. fusion efforts; Standard gases for automotive emissions analysis now available; Optical radiation news; Highlights; Fabric flammability test to be studied; Publicat ons of the National Bureau of Standards.

COM-73-50186-09/GA PC-GPO/MF$1.45-NTIS
National Bureau of Standards, Washington, D.C.
DIMENSIONS/NBS. VOLUME 57, NUMBER 9, SEPTEMBER 1973.
Monthly technical news bulletin.
Sep 73, 25p NBS/DIM-57/9
Library of Congress Catalog Card no. 25-26527.
Paper copy available from GPO $6.50/year as C13.13:57, $0.65/copy as C13.13:57/9.

Descriptors: (*Periodicals, Research projects), Arts, Structural design, Fire safety, Pollution, Measuring instruments, Standards, Units of measurement, Calorimeters, Surface roughness.
Identifiers: Technical news bulletins, National Bureau of Standards.

The monthly magazine features short summaries of major technical developments, highlights of work in progress, major speeches and statements by Bureau management, and a listing of NBS publications. The table of contents for the current issue is the following: Science aids art world; New way to predict materials failure; Nation's fire services program strengthened; Highlights; Pollution-measuring device developed; NBS aids night vision market; Weights, measures, and the new equity; Product information guide published; Picosecond-pulse precision improved; New clinical chemistry program announced; Microcalorimetry applied to clinical chemistry; Computerized system measures surface roughness; Plastic jerry-can standard recommened; Extra dense lead glass standard issued; ARPA/NBS semiconductor workshop held; Publications.

CONF-730533-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn. Technical Information Center (Aec), Oak Ridge, Tenn.
CURRENT TRENDS IN MAKING INFORMATION CENTERS SELF-SUPPORTING BY CHARGING FOR THE SERVICES.
F. Kertesz, and J. D. Cape. 1972, 16p

Descriptors: (*Information systems, *Management), Communications, Documentation, Economics.

For abstract, see NSA 28 06, number 15035.

N73-29985/1GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, Fla.
PRODUCTS LIABILITY: A SELECTIVE BIBLIOGRAPHY.
24 May 73, 18p NASA-TM-X-69493, KSC-GP-756-REV
Misc-Revised.

Descriptors: *Bibliographies, *Legal liability, *Products, Quality control, Regulations.

For abstract, see STAR 1120

ORNL-TM-4295/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
DESCRIPTION AND EVALUATION OF THE INFORMATION AND DATA CENTERS AT THE OAK RIDGE NATIONAL LABORATORY.
M. Nicholson. Jul 73, 37p
Contract W-7405-eng-26

Descriptors: (*Information systems, *Ornl), Data processing, Performance.

For abstract, see NSA 28 06, number 15036.

PB-223 882/2GA PC$3.00/MF$1.45
Department of Health, Education, and Welfare, Washington, D.C. Office of the Secretary.
HEW INVENTIONS AVAILABLE FOR LICENSING,
Norman J. Latker. 10 Sep 73, 31p*

Descriptors: (*Inventions, Availability), (*Patents, United States Government), Classifications, Research, Equipment, Methodology, Laboratories, Instruments, Information systems.
Identifiers: Government owned patents, Applications, Management information systems.

Approximately 302 Department of Health, Education and Welfare patents and patent applications available for commercial licensing are listed. Inquiries concerning the licensing of these inventions should be directed to the General Counsel, Department of Health, Education, and Welfare, Washington, D.C. 20014. Portions of this document are not fully legible.

PB-223 890/5GA PC$4.25/MF$1.45
Naval Research Lab., Washington, D.C.
REPORT OF NRL PROGRESS.
Jul 73, 124p
Also available from NTIS on subscription $22.50/year domestic, $28.25/year foreign.

Descriptors: (*Naval research, Reviews), Electronics, Physical metallurgy, Radar, Space exploration, Fractography, Underwater acoustics, Atmospheric physics, Controlled atmospheres, Radio astronomy, Ballistic missiles, Solid state physics, Nuclear physics.

The report is composed of essays on the first 50 years of research at the Naval Research Laboratory.

PB-224 070/3GA PC$3.75/MF$1.45
Illinois Univ., Urbana, Dept. of Computer Science.
ARCHITECTURE OF A COMMUNITY MEDICAL HISTORY DATA BASE.
Master's thesis,
Craig Alan Mills. 7 Aug 73, 77p* UIUCDCS-R-73-589

Descriptors: (*Information systems, *Medicine), (*Information retrieval, Medicine), (*Computers, *Medical records), Data processing systems, Hospitals, Management, Theses.
Identifiers: *Biomedical information systems, *Medical computer applications, Medical data processing, Hospital administration.

The medical profession has many cumbersome methods, such as most present medical codes, handwritten records, and the amount of paperwork involved in the care of a patient. These cumbersome methods and the establishment of Medicare, insurance forms, and other red tape which have become an intricate part of our society hinder the development of computer applications in the medical profession. This paper attempts to cover the many legal, security, and technical problems that arise. A general background of computer applications in the medical professions is given with emphasis on the usefulness of a medical history data base. From such computer applications, the medical profession will derive innumerable benefits. These benefits include more complete records, more individualized care, and efficient handling of paperwork.

PB-224 142/0GA PC$5.25/MF$1.45
California Univ., Berkeley.
WORKSHOP ON FUTURE DIRECTIONS OF ELECTROMAGNETICS OF CONTINUOUS MEDIA.
Final rept.,
D. J. Angelakos, and W. K. Kahn. Dec 72, 64p
Grant NSF-GK-29024
Prepared in cooperation with George Washington Univ., Washington, D. C.

Descriptors: (*Electromagnetic radiation, Meetings), Remote sensing, Geophysical surveys, Atmospheric sounding, Telecommunication, Radar, Traffic control, Radiobiology, Optics, Electromagnetic theory.

The goal of this workshop was to foster the interchange of ideas among researchers: (1) to describe the current status of electromagnetic theory of continuous media and (2) to identify the important and critical unsolved problem areas in need of further study. The invited papers and the resulting discussions served to delineate the present areas of current research and to focus on the direction for future research in electromagnetics. (Author)

5C. Economics

AD-767 687/7GA PC$6.00/MF$1.45
Naval Postgraduate School Monterey Calif
MONOPOLISTIC COMPETITION IN INDONESIAN PETROLEUM INDUSTRY.
Master's thesis,
Sujoso Sukarno. Sep 73, 79p

Descriptors: (*Petroleum industry, *Indonesia), (*Bargaining, *Game theory), Economics, Mathematical models, Linear programming, Set theory, Theses.
Identifiers: *Monopolistic competition, Economic models, Resource allocation.

Competition has been considered to be the prime force which leads to an optimal solution of the economic problem. But the underlying assumptions used in the current equilibrium theory are so empirical, such that in the practical world there just is no competition as proposed by the theory. In fact, in real life economic competition does not exist in its pure form, but in a more realistic form instead: the monopolistic competition. A game theoretical approach is implemented to find answers to the issues of this particular phenomenon. Petroleum environment in Indonesia provides the structure for the economic analyses. (Author)

AD-767 872/5GA PC$9.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
THE USE OF ESCALATION CLAUSES TO DEAL WITH ABNORMAL FLUCTUATIONS IN THE ECONOMY.
Master's thesis,
Edward Forster Jones, and Peter John Starnell.
Oct 69, 136p Rept no. GSM/SM/69-10

Descriptors: (*Economics, Adaptive systems), (*Contracts, *Armed forces procurement), Modification kits, Transformations, Factor analysis, Jet transport planes, Mathematical models, Reviews, Indexes, Costs, Theses.
Identifiers: *Escalation clauses, Inflation(Economics), *Abnormal fluctuations, Prices, C-5 aircraft, Recommendations, C-5A aircraft.

In order to adjust contract prices for changes in the level of the economy, the use of escalation provisions in contracts has been investigated. Included in this investigation is an examination of the objectives and construction methods of these escalation clauses. The various elements that should be considered and contained in an escalation clause are also analyzed. Emphasis is placed on the use of escalation in military and commercial contracts. Recommended guidelines for escalation clause construction are suggested. (Author)

AD-767 954/1GA PC$2.75/MF$1.45
Consolidated Analysis Centers Inc Arlington Va
AN ELASTICITY APPROACH TO FORECAST DYADIC TRADE AND ECONOMIC INTERDEPENDENCE,
Robert Franco. Aug 73, 19p* Rept no. CACI-Working Paper-5
Contract DAHC15-71-C-0201, ARPA Order-2067
See also AD-767 953 and AD-767 955.

Descriptors: (*Economics, Mathematical models), Predictions, Commerce.
Identifiers: Econometrics, Economic forecasting, International trade.

Economic interdependence is defined as the relative proportion of a country's total trade with another country. To forecast economic interdependence in the 1985-1994 period, forecasts of dyadic trade must first be made. An elasticity approach is used to generate these forecasts. The income elasticity of imports for a particular country is defined as the ratio of the percent change in its imports divided by the percent change in its GNP. Import elasticities are important concepts of international economics and their use in forecasting economic interdependence is particularly useful since elasticities can yield future dyadic trade. (Author)

AD-767 955/8GA PC$3.50/MF$1.45
Consolidated Analysis Centers Inc Arlington Va
DYNAMIC MODELING OF CENTRAL ENVIRONMENTAL DESCRIPTORS FOR EASTERN AND WESTERN EUROPE,
Herman M. Weil, and Michael R. Leavitt. Aug 73, 57p* Rept no. CACI-Working-Paper-6
Contract DAHC15-71-C-0201, ARPA Order-2067
See also AD-767 949.

Descriptors: (*Economics, Predictions), (*Political science, Mathematical models), Power, Stability, Friction, Alignment.
Identifiers: Econometrics.

The paper describes the construction of a fully interactive forecasting model. The model will be used to forecast five central environmental descriptors: national power base, internal instability, international conflict, international alignment, and economic interdependence. The model describes a system in which all five central environmental descriptors are related to one another and are forecast simultaneously. (Author)

AD-768 116/6GA PC$5.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
COMPARATIVE ANNUAL COSTS,
Monte G. Norton, and Joseph W. Foster. Jul 71, 57p Rept no. USAMC-ITC-2-71-17

Descriptors: (*Economics, Decision making), Replacement theory, Obsolescence theory, Industrial equipment, Costs, Statistical analysis, Computer programs.
Identifiers: *Comparative annual costs, *Fixed investment.

Comparative annual costs offers a simple and exact method of comparing costs of capital investment alternatives. It allows for interest and can be used for a single piece of equipment or for an entire plant. Differences in first cost, service life, operating expense, deterioration and obsolence cost, and salvage value are accounted for, and there is no limit to the items which can be considered. The calculations are readily made with only two tabulated factors. Comparative annual costs can be applied as either a quick evaluation of equipment investment alternatives or a formal method of machine tool replacement analysis. (Author)

COM-73-11602/2GA Reprint
Washington State Dept. of Fisheries, Olympia.
ECONOMIC EVALUATION OF WASHINGTON'S 1967 TROLL SALMON FLEET,
Mike Fraidenburg. 1972, 6p NOAA-73080207
Pub. in Pacific Marine Fisheries Commission, Bull8 p75-80, 1972.

Descriptors: (*Salmon, *Economic analysis), Fisheries, Boats, Statistical data, Washington(State).
Identifiers: Commercial fishing.

Application of average ex-vessel prices to reported landings of a random 10% sample of Washington's 1967 commercial ocean salmon fleet showed the troller boat category producing 80% of total landed value and demonstrating the highest gross return on investment. Hypothetical elimination of less efficient boat categories demonstrated potential economic benefits of various license limitation schemes. Deficiencies in 1967 data were noted and recommendations were made for future troll fishery economic studies. (Author)

COM-73-11609/7GA PC$3.00/MF$1.45
Guam Div. of Fish and Wildlife, Agana.
DEVELOPMENT OF GUAMS' COMMERCIAL FISHERIES POTENTIALS.
Completion rept. Jul 69-Jun 72,
Isaac I. Ikehara. Jul 73, 9p NOAA-73090607

Descriptors: (*Fisheries, Economic development), (*Guam, Fisheries), Aquaculture, Fishing.
Identifiers: Commercial fishing.

The report describes procedures used in an effort to develop Guam's commercial fisheries potential. At least 17 fish species were identified as having potentials for commercial exploitation. Consideration was also given to development of fish farming (aquaculture). It was found that there was a general lack of interest by the working people of the area in this type of endeavor. Only one full-time operation based on catching bottom fish and mackerel has developed in Guam.

COM-73-11715/2GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
SUPERTANKERS AND SUPERPORTS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Elizabeth A. Harrison. Oct 73, 37p* NTIS-WIN-73-064

Descriptors: (*Marine terminals, *Bibliographies), (*Tanker ships, Bibliographies), Environmental surveys, Construction, Water pollution, Site survey, Oils, Water pollution, Economic analysis, Shipbuilding, Petroleum transportation.
Identifiers: *Supertankers, *Deepwater ports, Oil pollution.

The NTISearch bibliography contains 32 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. Included are abstracts concerning the construction and operation of supertankers and their port facilities, both deepwater and offshore. Also covered are the environmental problems associated with their operation. (Author)

COM-73-50115-09/GA PC-GPO/MF$1.45-NTIS
Bureau of Economic Analysis, Washington, D.C.
SURVEY OF CURRENT BUSINESS. VOLUME 53, NUMBER 9, SEPTEMBER 1973.
Monthly periodical rept.,
Sep 73, 101p BEA-SCB-73-53-09
Paper copy availablefrom GPO $20.00/year as C56.109:53, $2.25/copy as C56.109:53/9; microfiche also available from NTIS $9.00/year.

Descriptors: (*Commerce, United States), (*Industrial relation, *Economic analysis), Economic surveys, International trade, Balance of payments, Statistical data, Capital, Profits, Income.
Identifiers: Gross national product.

In addition to 2,500 statistical series, the September issue contains a roundup of the business situation, capital spending, export and import demand, inventories, personal income, and articles on capital expenditures rise U.S. direct investment abroad, U.S. balance of payments developments and Bureau of Economic Analysis staff papers.

COM-73-50182/GA PC-GPO/MF$1.45-NTIS/copy
Bureau of International Commerce, Washington, D.C.
OVERSEAS BUSINESS REPORTS.
James W. Wilkes. 1973-74,approx. 110 issues
Paper copy available from GPO $28.50/year as C1.50:73, $0.30/copy.

The reports present basic authoritative information for exporters, importers, investors, manufacturers, researchers, and those concerned with international trade and economic conditions. For individual reports, see below:

OBR-73-41. Selling in Nigeria. Sep 73, 12p
COM-73-50182-41/GA COM-73-50182-41/GA

COM-73-50185/GA PC
%FOREIGN ECONOMIC TRENDS AND THEIR IMPLICATIONS FOR THE UNITED STATES.
1973,147 issues$0.25/copy
Paper copy available from GPO $27.00/year as C42.30.

The series of reports presents current business and economic developments in every country that offers a present or potential market for United States goods. The reports include a summary of the prospective impact on the United States economy, changing trade patterns prospective business trends, balance of payments, government policies, and investments. For individual country reports, order by COM-number listed below:

ET-73-095. Tanzania. Annual rept. 20 Aug 73, 11p, supersedes ET-72-087 COM-73-50185-095/GA COM-73-50185-095/GA
ET-73-099. Bahamas. Annual rept. 30 Aug 73, 11p, supersedes ET-72-109 COM-73-50185-099/GA COM-73-50185-099/GA
ET-73-100. Uruguay. Semiannual rept. 1 Sep 73, 11p, supersedes ET-73-024 COM-73-50185-100/GA COM-73-50185-100/GA
ET-73-101. Germany. Semiannual rept. 5 Sep 73, 8p, supersedes ET-73-025 COM-73-50185-101/GA COM-73-50185-101/GA
ET-73-102. Australia. Semiannual rept. 4 Sep 73, 15p, supersedes ET-73-026 COM-73-50185-102/GA COM-73-50185-102/GA
ET-73-103. Zambia. Annual rept. 24 Aug 73, 11p, supersedes ET-72-80, COM-73-50185-103/GA COM-73-50185-103/GA
ET-73-104. Thailand. Semiannual rept. 14 Sep 73, 11p, supersedes ET-73-029. COM-73-50185-104/GA COM-73-50185-104/GA
ET-73-105. Mozambique. Annual rept. 14 Sep 73, 7p, supersedes ET-72-059 COM-73-50185-105/GA COM-73-50185-105/GA
ET-73-106. Gabon. Annual rept. 18 Sep 73, 12p, supersedes ET-73-005. COM-73-50185-106/GA COM-73-50185-106/GA
ET-73-107. Barbados. Annual rept. 7 Sep 73, 11p, supersedes ET-72-126. COM-73-50185-107/GA COM-73-50185-107/GA

COM-73-50841/8GA PC-GPO/MF$1.45-NTIS
Bureau of Competitive Assessment and Business Policy, Washington, D.C.
U. S. INDUSTRIAL OUTLOOK 1974 WITH PROJECTIONS TO 1980,
Gary M. Cook. Oct 73, 393p
Paper copy available from GPO $3.40 as stock no. 0325-00004.

Descriptors: (*Industries, *Economic surveys), Construction, Wood products, Materials, Energy, Credit, Pollution, Transportation, Food, Banking business, Containers, Telecommunication, Machinery, Instruments, Power equipment, Services, Clothing.
Identifiers: Wholesale trade, Retail trade.

The 1974 edition contains special reports on general economic areas that affect most of the individual industries covered. Reports on the energy situation, consumer credit, and pollution control costs and international competitiveness offer an overall view of recent developments and a general summary of anticipated trends. Detailed analyses of more than 200 individual manufacturing and nonmanufacturing industries, or closely related industry groups, have been arranged in ten major sections. Each industry statement contains information on recent developments and projects levels of activity for 1974 and 1980.

PB-223 985/3GA PC-GPO/MF$1.45-NTIS
Office of Management and Budget, Washington, D.C. Statistical Policy Div.
STANDARD INDUSTRIAL CLASSIFICATION MANUAL, 1972.
Apr 72, 641p
See also PB-223 986. Supersedes report dated 1967.
Paper copy available from GPO $6.75 as stock no. 4101-0066.

Descriptors: (*Industries, Classifications), (*Federal cataloging system, Industries), Manuals, Agriculture, Forestry, Fishing, Mining, Construction, Manufacturing, Transportation, Public administration, Telecommunication, Utilities, Commerce, Finance, Insurance, Real property, Services.
Identifiers: Wholesale trade, Retail trade, Hunting, Trapping, *Standard industrial classifications.

The Standard Industrial Classification was developed for use in the classification of establishments by type of activity in which they are engaged; for purposes of facilitating the collection, tabulation, presentation, and analysis of data relating to establishments; and for promoting uniformity and comparability in the presentation of statistical data. It is intended to cover the entire field of economic activities: agriculture, forestry, fishing, hunting, and trapping; mining; construction; manufacturing; transportation, communication, electric, gas, and sanitary services; wholesale and retail trade; finance, insurance, and real estate; personal, business repair, and other services; and public administration.

PB-223 986/1GA Mag Tape $97.50
Office of Management and Budget, Washington, D.C. Statistical Policy Div.
TITLES OF INDUSTRIES. STANDARD INDUSTRIAL CLASSIFICATION MANUAL 1972,
Milo O. Peterson. Jul 73, 1 reel mag tape OMB-SP-SIC72-TITLES
See also PB-223 987.
Specify tape recording mode desired: 7 track, 556 or 800 BPI, odd and even parity; or 9 track, 800 BPI, odd parity.

Descriptors: (*Industries, Classifications), (*Federal cataloging system, Industries), Magnetic tapes, Coding, Manuals.
Identifiers: *Standard industrial classifications, IBM 360 computers, IBM 370 computers.

The file contains magnetic tape records of the titles of 1004 industries, 421 industry groups, 84 major groups and 11 divisions. The 9-track/800 BPI odd parity magnetic tape contains the SIC titles as shown on pages 351-565 and 433-442 of the 1972 SIC manual. The file is in numerical code order, and is recorded in upper and lower case EBCDIC. The IBM 360/370 variable record length format uses a maximum of 255 bytes per record, with a maximum block size of 2000 characters.

PB-223 987/9GA Mag Tape $97.50
Office of Management and Budget, Washington, D.C. Statistical Policy Div.
SHORT TITLES OF INDUSTRIES. STANDARD INDUSTRIAL CLASSIFICATION MANUAL 1972,
Milo O. Peterson. Jul 73, 1 reel mag tape OMB-SP-SIC72-SHORT
See also PB-223 986 and PB-223 988.
Specify tape recording mode desired: 7 track, 556 or 800 BPI, odd and even parity; or 9 track, 800 BPI, odd parity.

Descriptors: (*Industries, Classifications), (*Federal cataloging system, Industries), Magnetic tapes, Coding, Manuals.
Identifiers: *Standard industrial classifications, *SIC short titles.

The file contains magnetic tape records of the short or tabulation titles of the 1004 industries, 421 industry groups, 84 major groups and 11 divisions. The 9-track/800 BPI odd parity magnetic tape contains the short titles recorded in upper and lower case EBCDIC. The short titles are as shown in Appendix B of the 1972 manual.

PB-223 988/7GA Mag Tape $97.50
Office of Management and Budget, Washington, D.C. Statistical Policy Div.
INDEX ITEMS OF STANDARD INDUSTRIAL CLASSIFICATION MANUAL,
Milo O. Peterson. Jul 73, 1 reel mag tape OMB-SP-SIC72-INDEX-ITEMS
See also PB-223 987.
Specify tape recording mode desired: 7 track, 556 or 800 BPI, odd and even parity; or 9 track, 800 BPI, odd parity.

Descriptors: (*Industries, Classifications), (*Federal cataloging system, Industries), Magnetic tapes, Manuals, Records, Coding.
Identifiers: *Standard industrial classifications, *SIC index items.

The file is one of three magnetic tape files consisting of parts of the 1972 Standard Industrial Classification Manual in a form as close as possible to the printed volume. The file is the approximately 16,867 records as shown on pages 366-430 and 443-580 of the manual.

PB-224 018/2GA PC$3.50/MF$1.45
Little (Arthur D.), Inc., Cambridge, Mass.
POTENTIAL ONSHORE EFFECTS OF DEEPWATER OIL TERMINAL-RELATED INDUSTRIAL DEVELOPMENT. VOLUME I. PART ONE. EXECUTIVE SUMMARY.
Final rept.
Sep 73, 68*
Contract EQC-220
Paper copy also available from NTIS $18.00/set of 4 reports as PB-224 017-SET.

Descriptors: (*Marine terminals, *Tanker ships), (*Pollution, Marine terminals), (*Economic analysis, Marine terminals), Impact, Economic factors, Economic development, Water pollution, Coasts, Land use, Environmental surveys, Forecasting, Refineries, Population growth, Oils, Crude oil, Air pollution.
Identifiers: *Deepwater ports, *Supertankers, Deepwater terminals.

The onshore, or secondary, effects of deepwater terminal development on each of five areas selected as terminal locations. The five locations are Machias, Maine; the vicinity of Sany Hook, New Jersey; the Delaware Bay (New Jersey); Grand Isle, Louisiana; and Freeport, Texas. The relative impacts of a terminal in each area affect the relative suitability of each area as a terminal site. Relative impacts include the additional industrial development, production employment, air and water pollution, land use, population changes, etc., resulting from terminal development. For each of the five sites studied, an economic and environmental profile as of 1970 was developed for the terminal area itself and the larger land region surrounding the terminal area. Projections were made of the economic growth of each terminal area and associated region for the years 1985 and 2000 to establish a base or reference line against which the impact of a deepwater facility might be assessed.

PB-224 019/0GA PC$6.25/MF$1.45
Little (Arthur D.), Inc., Cambridge, Mass.
POTENTIAL ONSHORE EFFECTS OF DEEPWATER OIL TERMINAL-RELATED INDUSTRIAL DEVELOPMENT. VOLUME II. PART TWO. MID-ATLANTIC REGION. PART THREE. MAINE.
Final rept.
Sep 73, 253p
Contract EQC-220
Paper copy also available from NTIS $18.00/set of 4 reports as PB-224 017-SET.

Descriptors: (*Marine terminals, *Tanker ships), (*Pollution, Marine terminals), (*Economic analysis, Marine terminals), Cape May, Sandy Hook, New Jersey, Impact, Economic factors, Economic development, Water pollution, Air pollution, Forecasting, Refineries, Population growth, Land use, Coasts, Maine, Machias Bay, Oils, Crude oil.
Identifiers: *Deepwater ports, Deepwater terminals, *Supertankers.

This report considers the economic and environmental consequences of establishing a deepwater terminal in two general locations: near Cape May in Southern New Jersey, and near Sandy Hook in Northern New Jersey. Because two 'sets' of impacts were to be examined, two geographic definitions of the Mid-Atlantic were used, one to reflect the broader, more diffuse economic impact of industrial activities relating to deepwater oil terminal operations, and the second to recognize the more localized environmental impact of such operations. The economic definition includes all of New Jersey, Pennsylvania and Delaware, since it is these three states which would be most likely to experience the major part of economic expansion directly or indirectly associated with crude oil importation and processing. The environmental definition includes a limited portion of the same three states - essentially a 'belt' of land approximately 20-40 miles wide, beginning in Middlesex County, New Jersey, in the north, following the Delaware River from Trenton, New Jersey to Wilmington, Delaware, and ending in Cape May County, New Jersey. Given a continuation of historical industrial development patterns, and the present foreclosure of Delaware to deepwater terminal activity, the above-defined belt is the one most likely to experience the greatest environmental impact.

PB-224 020/8GA PC$6.25/MF$1.45
Little (Arthur D.), Inc., Cambridge, Mass.
POTENTIAL ONSHORE EFFECTS OF DEEPWATER OIL TERMINAL-RELATED INDUSTRIAL DEVELOPMENT. VOLUME III. PART FOUR. GULF COAST REGION.
Final rept.
Sep 73, 261p
Contract EQC-220
Paper copy also available from NTIS $18.00/set of 4 reports as PB-224 017-SET.

Descriptors: (*Marine terminals, *Tanker ships), (*Pollution, Marine terminals), (*Economic analysis, Marine terminals), Grand Isle, Louisiana, Impact, Economic factors, Economic development, Water pollution, Air pollution, Forecasting, Refineries, Mississippi River, Population growth, Land use, Coasts, Houston Ship Channel, Oils, Crude oil, Mexico Gulf, Texas.
Identifiers: Freeport(Texas), *Deepwater ports, Deepwater terminals, *Supertankers.

Two potential deepwater terminal sites were assumed for the purposes of this study, one off Grand Isle, Louisiana, and the other off Freeport, Texas. The terminal locations assumed for this study represent the reality of what is occurring in Louisiana and Texas in regard to deepwater terminal development; these locations are under active consideration. The impact analysis on the Gulf Coast was evaluated on the basis of three major options: (1) no deepwater terminal anywhere along the Gulf Coast; (2) a deepwater terminal off Lafourche, Louisiana; and (3) a deepwater terminal off Freeport, Texas. These three major alternatives result in different state allocations of projected refinery capacity and associated development along the Gulf Coast.

PB-224 021/6GA PC$6.25/MF$1.45
Little (Arthur D.), Inc., Cambridge, Mass.
POTENTIAL ONSHORE EFFECTS OF DEEPWATER OIL TERMINAL-RELATED INDUSTRIAL DEVELOPMENT. VOLUME IV. PART FIVE. APPENDICES.
Final rept.
Sep 73, 271p
Contract EQC-220
Paper copy also available from NTIS $18.00/set of 4 reports as PB-224 017-SET.

Descriptors: (*Marine terminals, *Tanker ships), (*Pollution, Marine terminals), (*Economic analysis, Marine terminals), Petroleum industry, Petroleum refining, Methodology, Data, Refineries.
Identifiers: *Deepwater ports, Deepwater terminals, *Supertankers.

The Appendices contain information and data pertinent to each area study. The Appendices are as follows: I. The Petrochemical Industry; II. United States Crude Oil Imports and Refining; III. Economic Methodology; IV. Environmental Methodology.

PB-224 075/2GA Mag Tape $97.50;Foreign $122.50
Rural Electrification Administration, Washington, D.C. Management Services Div.
ANNUAL STATISTICAL REPORT OF REA TELEPHONE BORROWERS,
Marvin T. Hearst, Harold D. Hoiberg, and Iris B. Adams. 31 Dec 72, 1 reel mag tape REA-Bull-300-4-TE72ASR
See also PB-224 076 and PB-224 077.
Specify tape recording mode desired: 7 track, 556 and 800 BPI, odd and even parity; or 9 track, 800 BPI, odd parity.

Descriptors: (*Public utilities, *Financing), Corporations, Statistical data, Financial management, Telephone systems, Payment, Magnetic tapes.
Identifiers: Rural Electrification Administration.

The annual report presents financial and statistical information on the operations of REA telephone borrowers individually and as a group. The report is based on financial and statistical statements submitted by 816 borrowers. However, since some borrowers did not report all items, the number of borrowers included is not the same for all tables. The data in the report are on a calendar year basis to coincide with the accounting period of practically all borrowers. The information submitted by the borrowers is subject to possible revision as a result of future audits and adjustments.

PB-224 076/0GA Mag Tape $97.50;Foreign $122.50
Rural Electrification Administration, Washington, D.C. Management Services Div.
ANNUAL STATISTICAL REPORT OF REA ELECTRIC DISTRIBUTION BORROWERS,
Marvin T. Hearst, Harold D. Hoiberg, and Iris B. Adams. 31 Dec 72, 1 reel mag tape REA-Bull-1-1-EL72ASR
See also PB-224 075 and PB-224 077.
Specify tape recording mode desired: 7 track, 556 and 800 BPI, odd and even parity; or 9 track, 800 BPI, odd parity.

Descriptors: (*Public utilities, *Financing), Corporations, Statistical data, Financial management, Electric power distribution, Magnetic tapes, Payment.
Identifiers: Rural Electrification Administration.

The annual report contains financial and statistical information about the operations of REA electric borrowers individually and as a group. The report also presents separate summary data on cooperative borrowers. Data in the report are on a calendar year basis, since most borrowers close their books on December 31. About 94 percent of the borrowers are private business corporations. Their detailed financial statements and operating reports generally are not matters of public record. If more details than given in the report are desired, requests should be submitted directly to individual borrowers. Additional data on borrowers which are not cooperatives are included in Federal Power Commission annual reports. The revenue and expense statistics for each borrower show the year's financial operations. The trend of a borrower's operations can be observed by comparing data in this report with that in previous annual reports. Statistics relating to principal and interest payments to REA are cumulative from the time the borrower obtained an REA loan.

PB-224 077/8GA Mag Tape $97.50;Foreign $122.50
Rural Electrification Administration, Washington, D.C. Management Services Div.
ANNUAL STATISTICAL REPORT OF REA POWER SUPPLY BORROWERS,
Marvin T. Hearst, Harold D. Hoiberg, and Iris B. Adams. 31 Dec 72, 1 reel mag tape REA-Bull-1-1-PS72ASR
See also PB-224 075 and PB-224 076.
Specify tape recording mode desired: 7 track, 556 and 800 BPI, odd and even parity; or 9 track, 800 BPI, odd parity.

Descriptors: (*Public utilities, *Financing), Corporations, Statistical data, Financial management, Electric power generation, Payment, Magnetic tapes.
Identifiers: Rural Electrification Administration.

The annual report contains financial and statistical information about the operations of REA electric borrowers individually and as a group. The report also presents separate summary data on cooperative borrowers. Data in the report are on a calendar year basis, since most borrowers close their books on December 31. About 94 percent of the borrowers are private business corporations. Their detailed financial statements and operating reports generally are not matters of public record. If more details than given in the report are desired, requests should be submitted directly to individual borrowers. Additional data on borrowers which are not cooperatives are included in Federal Power Commission annual reports. The revenue and expense statistics for each borrower show the year's financial operations. The trend of a borrower's operations can be observed by comparing data in this report with that in previous annual reports. Statistics relating to principal and interest payments to REA are cumulative from the time the borrower obtained an REA loan.

PB-224 112/3GA PC$19.25/MF$1.45
Oregon State Executive Dept., Salem. Local Government Relations Div.
REPORT OF THE SENATE TASK FORCE ON ECONOMIC DEVELOPMENT TO THE 57TH LEGISLATIVE ASSEMBLY.
Rept. for Jul-Dec 72.
Dec 72, 341p LGR-72-15-11

Descriptors: (*Economic development, *Oregon), (*Regional planning, Reviews), Projects, Organizations, Legislation, Urban planning, Recommendations, Rural areas, Problem solving.
Identifiers: Economic task forces.

The report describes the activities, findings, and recommendations of the Senate Task Force with respect to economic development, particularly in nonmetropolitan parts of Oregon. It is organized in six sections: introduction, background, work of the Task Force, summary of findings, proposals for legislative action, other recommendations, and addendums.

PB-224 249/3GA PC-GPO/MF$1.45-NTIS
Bureau of Labor Statistics, Washington, D.C.
PRODUCTIVITY: A SELECTED BIBLIOGRAPHY 1965-71.
Final rept.
1973, 113p DOL-BLS-B-1776
Paper copy available from GPO $1.25 as stock no. L2.3:1776.

Descriptors: (*Economic analysis, Productivity), (*Bibliographies, Productivity), Concepts, Methodology, Econometrics, Trends, Salaries, Prices, Employment, Manpower, Education,

Management, Organizing, Transformations, Research, Development, Theses, Cost analysis, Industrial relations.
Identifiers: Annotated bibliographies.

The bibliography is intended to facilitate the study of productivity. It covers a large selection of books and articles that were published between 1965 and 1971. It provides annotated references for nearly 800 publications dealing with concepts and methods, measurement of levels and trends, the sources of productivity change, and the relation of productivity to the economy as a whole and to economic variables such as wages and prices.

PB-224 389/7GA PC-GPO/MF$1.45
Bureau of Labor Statistics, Washington, D.C.
INDUSTRY WAGE SURVEY, WOMEN'S AND MISSES' DRESSES AUGUST 1971.
Final rept.
1973, 41p DOL-BLS-B-1783
Paper copy available from GPO $0.65 as L2.3:1783.

Descriptors: (*Wage surveys, Industries), (*Clothing, Females), Classifications, Methodology, Labor unions, Earnings, Statistical distributions, Fringe benefits, Benefit plans, Municipalities, Retirement.
Identifiers: Womens dresses, Hourly earnings.

A summary is made of wages and supplementary benefits in the women's and misses' dress industry in 12 selected areas in August 1971.

TT-70-55112/7-8/GA PC$6.50
Department of Housing and Urban Development, Washington, D.C. Office of International Affairs.
PLANNED ECONOMY. VOLUME 25, NUMBERS 7-8, 1970.
1973, 284p
Trans. of Gospodarka Planowa (Poland) v25 n7 p1-63, n8 p1-64 1970, by Wojciech Charabin and Halina Markiewicz. The above journal is translated on a regular basis. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: (*Economic factors, *Poland), (*Industries, *Management engineering), Utilization, Economic models, Systems analysis, Meetings, USSR, Production engineering, Reviews, Petrochemistry, Machinery, Coal mining, Agriculture, Finance, Translations.
Identifiers: Socialist countries, Economic reform.

A number of reports are presented on economic and industrial management in Poland, including the utilization of small industry, economic models, planning and management systems, incentives, agricultural economics, optimum size of industrial enterprises, production profiles, development of machine, steel, and coal mining operations, and economic symposia, as well as economic factors in the socialist countries.

5D. History, Law, and Political Science

AD-767 681/0GA PC$5.00/MF$1.45
Naval Postgraduate School Monterey Calif
APPLICATIONS OF CLUSTER ANALYSIS TO SOME PROBLEMS OF INTEREST TO THE U.S. DEPARTMENT OF STATE.
Master's thesis,
James Richard Lamping. Sep 73, 60p

Descriptors: (*Political science, Numerical methods and procedures), Government(Foreign), Interactions, Theses.
Identifiers: International relations, Cluster analysis.

The thesis asserts that cluster analysis, or numerical taxonomy, has many potential applications in the field of international relations. It demonstrates two representative applications. Both examples treat the nations of the world as objects having measurable attributes, and both examples use selected attributes to produce a dendrogram (or hierarchical classification) of the nations of the world. In one example this dendrogram is used to objectively group the nations into blocs based on external economic ties. In the other example the dendrogram is used to highlight interactions among five attributes, ignoring the identify of individual nations, the same way a scatter plot highlights interactions between two variables. (Author)

AD-767 949/1GA PC$3.00/MF$1.45
Consolidated Analysis Centers Inc Arlington Va
QUANTITATIVE METHODS FOR LONG-RANGE ENVIRONMENTAL FORECASTING.
Interim technical rept. no. 3,
Robert Franco, and Herman Weil. Aug 73, 29p* Rept no. CACI-73081
Contract DAHC15-71-C-0201, ARPA Order-2067
See also AD-767 950.

Descriptors: (*Political science, Mathematical models), Predictions, Friction, Alignment, Economics, Stability, Power.
Identifiers: National security.

The work is concerned with the development of a model that examines interactive effects among five central environmental descriptors: international conflict, international alignment, economic interdependence, internal instability, and national power base. The overall purpose of the model is to acquaint national security analysts with modern long-range forecasting techniques and to provide a long-range forecast of Europe (1985-1994) using the aforementioned descriptors. (Modified author abstract)

AD-767 950/9GA PC$3.00/MF$1.45
Consolidated Analysis Centers Inc Arlington Va
NATIONAL POWER BASE AS A COMPONENT OF A LONG-RANGE FORECASTING MODEL,
Aaron Greenberg, and Michael R. Leavitt. Aug 73, 31p* Rept no. CACI-Working Paper-1
Contract DAHC15-71-C-0201, ARPA Order-2067
See also AD-767 949 and AD-767 951.

Descriptors: (*Defense systems, Predictions), (*Economics, Mathematical models), Stability, Power, Friction, Foreign policy.

National power base is viewed as the material and human resources that are available to a nation. These resources are divided into a military dimension and an economic dimension. The military dimension is the nation's realized military power, that is, those resources, skills, and political will available at a given time to engage in military conflict. A nation's military power base index is constructed from the nation's population, its energy consumption, its GNP, and its GNP per capita. Future values of national power base are determined by two broad categories of variables. The first category includes variables external to the forecasting model, such as increases in population and growth in GNP, that have an impact on a nation's power base. The second category includes relationships with other central environmental descriptors that are expected to have an impact on the index. In the paper, international conflict, international alignment, and internal instability are the three descriptors that affect the rates at which military and economic power base change. (Author)

AD-767 951/7GA PC$3.00/MF$1.45
Consolidated Analysis Centers Inc Arlington Va
THE USE OF INTERNATIONAL ALIGNMENT IN A LONG-RANGE FORECASTING MODEL,
Herman M. Weil. Aug 73, 30p* Rept no. CACI-Working Paper-2
Contract DAHC15-71-C-0201, ARPA Order-2067
See also AD-767 950 and AD-767 952.

Descriptors: (*Political science, Mathematical models), Predictions, Alignment, Attitudes, Behavior, Europe, United States government, USSR, Economics, Power.
Identifiers: International relations, Conflict.

International alignment is defined as the degree to which two nations share similar attitudes or patterns of behavior with respect to some mutually salient third nation or group of nations. In the European context, the United States and the Soviet Union are the most plausible salient nations. The nations of Europe will be considered aligned to the extent that they behave similarly toward the two major powers. In addition, a modified bipolar schema will be used to determine the extent to which the European nations are aligned with the United States or with the Soviet Union. Forecasts of nations' alignments with these two powers will suggest the degree to which the present divisions of the European continent are expected to continue in the future. These forecasts will be used to infer the potential for European nations to act, in unison, as a third major power. Predictors of alignment patterns include the degree of internal turmoil and revolution, nations' economic and military power bases, their total international conflict, and their comparative levels of conflict with the United States and the Soviet Union. In addition, expected patterns of trade with these two major powers will serve as a predictor of European nations' alignment patterns. Predictors of alignment patterns include comparative distances from the United States and the Soviet Union and nations' polity types. (Author)

AD-767 952/5GA PC$3.00/MF$1.45
Consolidated Analysis Centers Inc Arlington Va
INTERNATIONAL CONFLICT AS A CENTRAL ENVIRONMENTAL DESCRIPTION IN A LONG-RANGE FORECASTING MODEL,
Robert Escavich, and Larry German. Aug 73, 40p* Rept no. CACI-Working Paper-3
Contract DAHC15-71-C-0201, ARPA Order-2067
See also AD-767 951 and AD-767 953.

Descriptors: (*Foreign policy, Mathematical models), Friction, Interactions, Behavior, Economics, Power, Stability.
Identifiers: International relations, Conflict.

International conflict is defined as negative interactions between nations, that is, hostile actions taken by one nation toward another nation. Those interactions include a continuum of conflict types ranging from verbal accusations to military action. Thus international conflict is not restricted to military encounters. The index of conflict that has been developed is intended to indicate the proportion of conflictual interaction within nation pairs of dyads. The index attempts to place conflict interaction is perspective by accounting for both positive and negative interaction between nations. The regression model that will be used to forecast international conflict contains five exogenous (externally determined) and four endogenous (internally determined) predictors. Exogenous predictors include geographic proximity/contiguity, number of treaties, defense as a percent of GNP, social distance, and level of interaction. Endogenous predictors are previous levels of conflict between dyad members, military power base, alignment, and internal instability. (Author)

AD-767 953/3GA PC$3.00/MF$1.45
Consolidated Analysis Centers Inc Arlington Va
A PRELIMINARY ANALYSIS OF INTERNATIONAL INSTABILITY IN A LONG-RANGE FORECASTING MODEL,
Herman M. Weil. Aug 73, 31p* Rept no. CACI-Working Paper-4
Contract DAHC15-71-C-0201, ARPA Order-2067
See also AD-767 952 and AD-767 954.

Descriptors: (*Political science, Mathematical models), Predictions, Stability, Insurgency, Economics, Power, Friction.
Identifiers: NATO.

Acts of internal instability are defined as those events where political violence is used to alter governmental policies or practices. Instability is defined in terms of two dimensions, turmoil and revolution, which correspond to the two classes of destabilizing acts described above. Turmoil is measured by occurrences of riots and demonstrations, while revolution is measured by armed attacks. Each of these measures is weighted for severity by deaths due to domestic violence. Several endogenous and exogenous predictors are used to forecast turmoil and revolution. These endogenous predictors include a nation's trade, its trade concentration, the size of its economic and military power bases, and the extent of its major power alignments. Among the exogenous predictors of internal instability are population, the nation's history of negative government sanctions, and its history of regular power transfers. Forecasts of the internal instability descriptor will indicate which European nations are most likely to experience severe turmoil and revolutionary activity in the period 1985-1994, and will detail the reasons behind these expectations. These forecasts will be grouped by current and expected future NATO and Warsaw Pact membership, and will compute expected levels of instability for NATO nations, Warsaw Pact nations, and other likely groupings of nations. (Author)

AD-768 017/6GA PC$4.00/MF$1.45
Rand Corp Santa Monica Calif
MARTIAL LAW IN THE PHILIPPINES,
Robert E. Klitgaard. Nov 72, 40p Rept no. P-4964

Descriptors: (*Military law, *Philippines), Reviews, Government(Foreign), Government employees, Attitudes, Reaction(Psychology).
Identifiers: Court reform, Land reform, Constitutional revisions, Civil liberties, *Martial law, Curfews.

Martial law occurred at a bleak time in the history of the Philippines and in the career of President Ferdinand Marcos. The populace was apparently united in only one thing--the need for drastic action, and it appears that martial law was accepted calmly by the overwhelming majority of Filipinos. After one month of martial law, President Marcos seemed in control of a civilian government, with strong military presence, that was implementing a series of well-planned, detailed reforms, was cracking down on dissidents, and was as yet not brutal in everyday application. Why all this occurred is open to a number of different interpretations. Three are offered in the report.

AD-768 027/5GA Not available NTIS
Rand Corp Washington D C
DECENTRALIZATION AND ALIENATION,
Robert K. Yin, and William A. Lucas. Feb 73, 17p Rept no. P-4970
Availability: Paper copy available from Rand Corp., 2100 M St. N.W., Washington, D.C. 20037. $1,00.

Descriptors: (*Public relations, *Political science), Reviews, Factor analysis, Social psychology, Management planning, Correlation techniques.
Identifiers: *Citizen alienation, *Decentralization.

The reduction of citizen alienation has stood prominently as a goal for the decentralization of public services. The use of governmental action to reduce this alienation follows a straightforward line of reasoning. The argument is that decentralization reduces organizational scale and makes government more responsive to neighborhood needs; the citizen is more active, receives better services, and somehow becomes less alienated. The purpose of the paper is to examine the potential relationship of several types of decentralization to alienation, and to review available empirical evidence dealing with correlates of alienation.

AD-768 030/9GA PC$3.00/MF$1.45
Radio Technical Commission for Aeronautics Washington D C
POLICY ORIENTED RESEARCH IN CALIFORNIA STATE GOVERNMENT,
Albert J. Lipson. Jan 73, 12p Rept no. P-4961

Descriptors: (*Management planning, *California), (*Research program administration, Creativity), Air pollution, Water pollution, Energy, Substitutes, Law, Sociometrics, Public relations, Decision making.
Identifiers: Government policies, State government, Project planning.

Government bureaucracies have been unable to keep pace with an increasingly rapid rate of technological and social change. To help correct deficiencies, the National Administration is committed to governmental reform and decentralization. The report discusses some of the problems and their possible solutions.

AD-768 032/5GA PC$3.25/MF$1.45
Rand Corp Santa Monica Calif
ROLE OF THE WARSAW PACT IN SOVIET POLICY,
Thomas W. Wolfe. Mar 73, 21p Rept no. P-4973

Descriptors: (*USSR, Foreign policy), (*Western Europe, Foreign policy), Eastern Europe.
Identifiers: Treaties, Warsaw Pact, International relations, Detente.

Contents:
- Past features of Soviet policy concerning the Warsaw Pact;
- The detente context of present Soviet European policy;
- Where does the Warsaw Pact fit into the picture.

AD-768 069/7GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
THE GLOBAL STRATEGIC PERSPECTIVE FROM MOSCOW,
Thomas W. Wolfe. Mar 73, 17p Rept no. P-4978

Descriptors: (*USSR, *Foreign policy), Military strategy, Arms control.
Identifiers: International relations, SALT(Strategic Arms Limitation Talks), Strategic arms limitation talks.

Contents: The international setting for Soviet policy in the seventies; Origins and evolution of the Soviet-U.S. strategic competition; The Soviet view of strategic power; General impact of SALT upon the strategic environment; Implications of SALT for Soviet strategic policy.

AD-768 084/6GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
AFTER THE WAR,
Brian Jenkins. Apr 73, 11p Rept no. P-4996

Descriptors: (*Limited war, Vietnam), Reviews, Political science.

AD-768 085/3GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
CHINA'S PROVINCIAL POLITICS IN 1971: A BIOGRAPHICAL APPROACH,
George C. S. Sung. Apr 73, 34p* Rept no. P-4998

Descriptors: (*Political science, *China), Reviews, Factor analysis, Correlation techniques, Organizations, Leadership, Civilian personnel, Military personnel, Background.
Identifiers: Provincial politics.

Interpretation of biographical data and statistical analysis is made to assist in understanding Chinese political behavior. The study uses the biographical approach to examine Chinese provincial politics in 1971.

AD-768 086/1GA Not available NTIS
Rand Corp Santa Monica Calif
ASIAN COMMUNIST MOVEMENTS AND THE MAJOR COMMUNIST POWERS: THE CASES OF JAPAN AND SOUTHEAST ASIA,
Paul F. Langer. Apr 73, 23p Rept no. P-4999
Availability: Paper copy available from the RAND Corp., Santa Monica, Calif. 90406. PC$1.00.

Descriptors: (*Communism, *Southeast Asia), (*Japan, Communism), Reviews, China, USSR.

AD-768 105/9GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
WORLDWIDE SOVIET MILITARY STRATEGY AND POLICY,
Thomas W. Wolfe. Apr 73, 40p Rept no. P-5008

Descriptors: (*USSR, *Foreign policy), Military strategy, Military organizations, Guided missiles, Arms control, Submarines, Ships, China, Europe.
Identifiers: Detente, International relations.

Contents: The setting in which Soviet military policy will evolve in the 1970s; Linkage between foreign policy interests and military power; Strategic Soviet policy and programs; Soviet naval policy and programs; Soviet policy affecting ground-air theater forces; Soviet military aid diplomacy.

AD-768 107/5GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
'A ROUTE FOR THE ENEMY TO ESCAPE,' -- HANOI'S VIEW OF THE CEASEFIRE,
Brian Jenkins. May 73, 11p Rept no. P-5012

Descriptors: (*Limited war, *Vietnam), Reviews, Foreign policy, United States government.

AD-768 204/0GA PC$3.00/MF$1.45
Stanford Research Inst Menlo Park Calif Strategic Studies Center
INTEGRATED GLOBAL FORCE POSTURES: AN OVERVIEW.
Technical note,
W. M. Carpenter, and S. P. Gibert. Oct 73, 56p
Rept no. SSC-TN-8974-75
Contract DAHC19-71-C-0001
Revision of reports dated May 73 and Jan 73.

Descriptors: (*Foreign policy, Mathematical models), Power, Nuclear weapons, Economics, China, Japan, USSR, United States government, Europe.
Identifiers: International relations, National security.

The report describes the approach to the problem of deriving guidelines global force posture planning for the 1980s. It discusses the necessity to consider the implications for national security of changes in the international environment. Among such changes are the attainment by the Soviet Union of nuclear parity with the United States, the growing importance of economic interactions among nations, and increasing indications of political multipolarity in the world, as evidenced by the emergence of China as a nuclear power and the advent of significant economic strength in Japan and in the Common Market of Western Europe. The report also explains the importance of redefining the future role of military force, and the relationship of military force to other elements of national power. Synthesis of these analysis elements with the national security implications of the Nixon Doctrine will enable the derivation of guidelines for a global force posture appropriate to the preservation of U.S. interests and objectives in the coming decade. (Author)

AD-768 231/3GA Not available NTIS
Rand Corp Santa Monica Calif
THE CROSS-NATIONAL COMPARISON OF FORCE POSTURES,
Paul Y. Hammond. May 73, 29p Rept no. P-5018
Availability: Paper copy available from Rand Corporation, Santa Monica, Calif. 90406. $1.00.

Descriptors: (*Political science, Reviews), Military organizations, Military strategy, Economics, Operational readiness, Natural resources.

COM-73-11639/4GA PC$5.75/MF$1.45
National Marine Fisheries Service, Washington, D.C.
PROCEEDINGS OF THE CONFERENCE ON COMMERCIAL FISHING VESSEL INSURANCE, HELD AT SMITHSONIAN INSTITUTION, NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY, WASHINGTON, D.C., ON JANUARY 9-10, 1973.
Sep 73, 229p* NOAA-73091906

Descriptors: (*Fishing, *Insurance), (*Ships, Insurance), (*Workmens compensation, Fishing), Risk, Litigation, Law(Jurisprudence), Government policies, Meetings, Claims, Payment, Industrial accidents, Cost analysis, Economic analysis, Rates(Costs), Ship hulls, Fisheries.
Identifiers: *Fishing vessels.

The report consists of the proceedings of the Conference on Commercial Fishing Vessel Insurance held in Washington DC on January 9-10, 1973. The papers deal with various aspects of insurance; legal factors and litigation; safety programs and practices; pooling risk and other institutional approaches; and alternatives for government action in alleviating the insurance problem. Various points of view such as those of vessel owners, labor unions and the insurance industry are presented.

PB-224 067/9GA PC$3.00/MF$1.45
Rochester Univ., N.Y. Graduate School of Management.
LOCAL CRIMINAL JUSTICE APPROPRIATIONS IN MONROE COUNTY, NEW YORK.
Information Paper No. 1,
Lois K. Horwitz, and Elizabeth Benz Croft. 7 May 73, 15p
Grant LEAA-72-NI-02-0001

Descriptors: (*Criminal law, *Appropriations), (*Criminology, *New York), Financial management, Budgeting, Local government, Statistical data, Comparison, Community relations, Reviews.
Identifiers: Criminal justice, Monroe County(New York).

Budget data for two points in time, from 31 local governments show funds allocated for local agencies directly involved with processing the criminal offender. Data indicate that in the last twelve years local appropriations for criminal justice activities have more than tripled. When compared to total local government appropriations, however, the local community today is appropriating relatively less for criminal justice activities than it did twelve years ago. (Author)

PB-224 303/8GA PC$3.00/MF$1.45
College of William and Mary, Williamsburg, Va. Metropolitan Criminal Justice Center.
POLICE REPORTS TO THE PUBLIC,
B. M. Gray, II. 30 May 73, 16p
Contract LEAA-NI-72-005-G

Descriptors: (*Police, *Public relations), Technical writing, Reporting, Data.
Identifiers: Management information systems.

The minimum basic data elements which should be utilized in the preparation of police reports to city officials and to the general public are presented. Data elements outlined include an introduction, departmental awards and recognitions, description of the area served, departmental description, enforcement activities in the areas of traffic and crime, and time utilization. Such data are designed to provide valuable management information for departmental self-evaluation, especially in such areas as resource allocation, response to community needs, and development of the best methods of identifying, capturing, and using all available information for management purposes.

5E. Human Factors Engineering

AD-767 739/6GA PC$5.25/MF$1.45
Hughes Aircraft Co Culver City Calif
ECONOMICAL MULTIFACTOR DESIGNS FOR HUMAN FACTORS ENGINEERING EXPERIMENTS.
Technical rept.,
Charles W. Simon. Jun 73, 189p* Rept no. HAC-P73-326 AFOSR-TR-73-1702
Contract F44620-72-C-0086

Descriptors: (*Human engineering, Factor analysis), Selection, Experimental data, Data processing systems, Optimization, Costs, Man-machine systems, Research program administration, Management planning, Errors.
Identifiers: Concepts, Economical multifactor designs.

Experimental data collection plans are described that permit the study of from five to thirty experimental human factors. The reported plans were selected from those employed in physical science research and were suitable for human factors engineering research. The method of employing these designs is two phase. In the first phase, a large number of potentially critical factors are systematically screened in a way that identifies the more important ones. In the second, functions are obtained that relate the more important quantitative factors to operate performance. Five principles that enable economical miltifactor human factors experiments to be successfully conducted are stated. (Modified author abstract)

N73-29055/3GA PC$4.00/MF$1.45
Scientific Translation Service, Santa Barbara, Calif.
THE RELATIONSHIP BETWEEN THE INTERMEDIATE MEDIUM AND THE TRANSFORMATION AND CONTRAST PHENOMENA.
T. Cramer. Aug 73, 38p NASA-TT-F-15035
Contract NASW-2483
Tran-Transl. Into English from Z. Fuer Sinnesphisiologie (West Germany), V. 54, 1923 p 214-242.

Descriptors: *Color vision, *Image contrast, *Luminosity, Character recognition, Transparence, Vision.

For abstract, see STAR 1120

PB-224 402/8GA MF$1.45-NTIS
National Academy of Sciences, Washington, D.C.
HUMAN FACTORS IN LONG-DURATION SPACEFLIGHT.
Mar 72, 282p
International Standard Book No. 0-309-01947-8. Library of Congress Catalog Card No. 70-189063.
Paper copy available from National Academy of Sciences Printing and Publishing Office, 2101 Constitution Ave., Wash., D.C. 20418 $6.50.

Descriptors: (*Human factors engineering, *Confined environments), (*Spacecraft environments, Factor analysis), Human behavior, Psychometrics, Aerospace medicine, Time, Biomedical measurement, Isolation, Sensory deprivation, Group dynamics, Health, Motivation, Sociometrics.
Identifiers: Long duration space flight, Health care, Cognition.

The volume provides an extensive review of the behavioral, psychological, and medical factors of long-duration manned space missions. Because in-flight biomedical and behavioral measurements have been very limited to date, the report supplements this information by surveying the general literature on studies of isolation and confinement, sensory deprivation, and spaceflight simulations. Thus, much of the information is relevant not only to manned spaceflight, but also to pressing social problems such as confinement in limited quarters, the dynamics of small groups, and health-care delivery.

5H. Man-Machine Relations

N73-29060/3GA PC$7.75/MF$1.45
City Univ. of New York.
NONLINEAR AND DIGITAL MAN-MACHINE CONTROL SYSTEMS MODELING.
Final Report.
R. Mekel. Nov 72, 112p NASA-CR-132294, FR-72-447-01
Contract NGR-33-013-053

Descriptors: *Feedback control, *Man machine systems, *Mathematical models, Computer programming, Liapunov functions, Operators (Personnel).

For abstract, see STAR 1120

PATENT-3 703 968/GA Not available NTIS
Department of the Navy Washington D C
LINEAR LINKAGE MANIPULATOR ARM.
Patent,
Richard W. Uhrich, and Jimmy L. Held. Filed 20 Sep 71, patented 28 Nov 72, 6p Rept nos. PAT-APPL-181 786,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Remote control systems, Arms), (*Patents, Remote control systems), Handling.
Identifiers: *Manipulators, PAT-CL-214-147-T.

The invention pertains generally to the field of mechanical manipulators. More particularly, but not by the way of limitation, this invention pertains to mechanical manipulators used to provide external manipulation of objects from within a deep submergence vehicle. In greater particularity, this invention pertains to a mechanical manipulator which by means of independent actuators provides mechanical movement within a system of polar coordinates.

PB-224 087/7GA PC$3.00/MF$1.45
BISRA-The Corporate Labs. of the British Steel Corp., London (England).
INDUSTRIAL ERGONOMIC ABSTRACTS, VOLUME 5, NUMBER 1.
Aug 73, 14p BISRA-CEL/HF/28/73
See also PB-222 676.

Descriptors: (*Man machine systems, Interactions), (*Human factors engineering, Great Britain), Systems analysis, Interfaces, Environmental engineering, Motivation, Attitudes, Anthropometry, Biodynamics, Stress(Physiology), Industrial engineering.
Identifiers: *Ergonomics.

Reports are made on the improvement of man-machine systems, and the adaptation of machinery to man and vice versa. This includes information systems, computerized simulation, and the role of man in automatic control systems.

5I. Personnel Selection, Training, and Evaluation

AD-767 664/6GA PC$5.00/MF$1.45
Naval Postgraduate School Monterey Calif

AN ANALYSIS OF ASSIGNMENT TECHNIQUES AND PREDICTOR VARIABLES UTILIZED BY THE U.S. MARINE CORPS GROUND OFFICER ASSIGNMENT SECTION.
Master's thesis,
Warren Shaw Walters. Jun 73, 56p

Descriptors: (*Marine Corps, *Job analysis), (*Psychometrics, *Officer personnel), Selection, Predictions, Personnel management, Performance(Human), Statistical analysis.
Identifiers: Allocations.

The assignment of Marine Corps officers to varying duties during a military career is a process of selection. The factors involved in this selection make up the predictor variables pertinent to the assignment. This study discusses the general techniques of officer assignment, and specifically analyzes the predictor variable established by evaluating the performance record. Comparison is made with a system that numerically represents fitness-report contents by a single value which becomes the record-evaluation predictor variable. (Author)

AD-767 670/3GA PC$6.75/MF$1.45
Naval Postgraduate School Monterey Calif
A CURRICULUM TO SUPPORT THE NAVY TRAINING/EDUCATION MANAGEMENT SUBSPECIALTY (9360) AT THE NAVAL POSTGRADUATE SCHOOL.
Master's thesis,
Robert Louis Smith. Jun 73, 91p

Descriptors: (*Naval training, *Management planning), (*Supervisory personnel, *Education), Military requirements, Programmed instruction, Management engineering, Background, Theses.
Identifiers: Training and education management, Advanced degrees, Curricula.

Instruction 1211.6D identified a new naval officer subspecialty, Training/Education (T/E) management but neither defined the new subspecialty nor specified the educational requirements necessary for the subspecialist. The paper presents background information leading to the identification of the T/E management subspecialty and an operational definition of the subspecialty. The results of a survey are used to develop two alternative curriculums to support the subspecialty which meet the Naval postgraduate school requirements for the degree of Master of Science in Management. (Modified author abstract)

AD-767 713/1GA PC$8.25/MF$1.45
Educational Testing Service Princeton N J
ANATOMY OF EVALUATION. IMPORTANT CONCEPTS AND TECHNIQUES IN EVALUATING EDUCATION/TRAINING PROGRAMS.
Technical rept.,
Scarvia B. Anderson, Samuel Ball, Richard T. Murphy, and Elsa J. Rosenthal. 31 Aug 73, 410p* Rept no. ETS-PR-73-36
Contract N00014-72-C-0433

Descriptors: (*Education, Effectiveness), (*Management planning, Education), Performance(Human), Supervision, Mathematical models, Standards, Sociometrics, Systems engineering, Analysis of variance, Statistical processes, Factor analysis, Tests.
Identifiers: Evaluation, Concepts, Methodology, Objectives.

The volume is addressed to directors and sponsors of education/training programs, as well as evaluators and those studying to become evaluators. Articles are included that bear on models for evaluation, the functions and targets of evaluation, program objectives and standards, the social context of evaluation, planning and designing evaluation studies, supportive systems technologies, typical student and program variables, measurement approaches and types, technical measurement considerations, reactive concerns in evaluation, and analysis and interpretation of evaluation results. The book serves as the report of Phase 1 of a three-part investigation. (Modified author abstract)

AD-767 962/4GA PC$2.75/MF$1.45
Naval Postgraduate School Monterey Calif
A SIMPLE POLICY PLANNING MODEL FOR DETERMINING SEA AND SHORE TOUR LENGTHS.
Final rept.,
Richard W. Butterworth. Sep 73, 18p NPRDC-TR-74-2

Descriptors: (*Personnel management, *Naval personnel), Industrial psychology, Manpower studies, Shipborne, Rotation, Naval shore establishments, Programming(Computers), Decision making, Morale, Optimization, Deployment, Management planning, Mathematical models.
Identifiers: *Sea duty, *Shore duty, Personnel rotation.

The periodic rotation of enlisted personnel between sea duty and shore duty assignments is a firmly established Navy policy. The efficiency with which the rotation process is managed, however, can have an effect on both the personnel readiness of operating units and morale of the individual Navy man. This study is part of a larger research program to develop computerized models of the rotation process to provide rotation managers in the Bureau of Naval Personnel with a quantitative basis for decisions and the capability to test and evaluate rotation policy. A simple model for determining nominal tour lengths which would keep the sea and shore populations in balance is presented. It differs from previous models developed within the research program in that a different set of assumptions are made, and different data are required for using the model. The applications and limitations of this model are discussed as well as some ideas on what future research might be done on the sea/shore rotation problem. (Modified author abstract)

AD-767 982/2GA PC$3.75/MF$1.45
Dunlap and Associates Inc Inglewood Calif Western Div
EFFECT OF A PREDICTOR DISPLAY ON CARRIER LANDING PERFORMANCE. PART I. EXPERIMENTAL EVALUATION.
Final rept.,
Joseph W. Wulfeck, Daniel J. Prosin, and William J. Burger. Jun 73, 98p
Contract N00014-71-C-0252
See also Part 2, AD-767 983. Prepared in cooperation with Naval Missile Center, Point Mugu, Calif.

Descriptors: (*Pilots, Performance(Human)), (*Glide path systems, Display systems), (*Jet fighters, *Carrier landings), Night landings, Flight paths, Ship models, Marker lights, Television display systems, Approach, Airplane models, Mathematical models.
Identifiers: F-4 aircraft, Computerized simulation.

A three-phase program was conducted to determine the effect of a predictor display on carrier landing performance. Phase A consisted of display development. Phase B consisted to display mechanization, informal preliminary experimentation and development of a detailed design for a formal experiment in Phase C to compare the predictor to a baseline display in a fixed-based F4 simulator with carrier qualified pilots as subjects. The report concludes the program. Part I presents the results of the experiment conducted in Phase C. (Modified author abstract)

AD-767 983/0GA PC$4.25/MF$1.45
Dunlap and Associates Inc Inglewood Calif Western Div
EFFECT OF A PREDICTOR DISPLAY ON CARRIER LANDING PERFORMANCE. PART II. LABORATORY MECHANIZATION.
Final rept.,
Louis E. Ehrhardt, Frank R. Cavallero, and Robert S. Kennedy. Jun 73, 42p
Contract N00014-71-C-0252
Prepared in cooperation with Naval Missile Center, Point Mugu, Calif. See also Part 1, AD-767 982.

Descriptors: (*Pilots, Performance(Human)), (*Glide path systems, Display systems), (*Jet fighters, *Carrier landings), Night landings, Flight paths, Ship models, Marker lights, Television display systems, Approach, Airplane models, Mathematical models.
Identifiers: F-4 aircraft, Computerized simulation.

A three-phase program was conducted to determine the effect of a predictor display on carrier landing performance. Part 2 describes the laboratory mechanization for the experiment in detail. Pilot's night carrier landing approach performance was measured as altitude and lateral error from glideslope and centerline using the predictor display, the baseline display and a glideslope reference element of the predictor display. The predictor display proved to be superior to the baseline display. It reduced vertical and lateral error variability during approach, increased the number of approaches within a joint FLOLS/lateral error envelope, increased the number of 'acceptable' approaches and produced approaches less variable than those observed in the fleet. The baseline display was found to be a valid simulation of the night carrier landing task. The glideslope reference element was found to contribute to the superiority of the predictor display but was judged inadequate as an independent display. Further development of the predictor display for introduction to the fleet is recommended. (Modified author abstract)

AD-768 029/1GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
EDUCATIONAL RESEARCH IN JAPAN--1972,
Roger E. Levien. Feb 73, 11p Rept no. P-4963

Descriptors: (*Education, *Japan), Research program administration, Reviews, Organizations, Government(Foreign), Systems engineering, Universities.

The organization of the Japanese educational R and D system is not easily comprehended, despite much more highly centralized system of education. The keystone is certainly the Ministry of Education, but the system is best viewed as embracing three segments: education agencies (national, prefectural, and local), research institutes, and universities and colleges.

AD-768 039/0GA PC$2.75/MF$1.45
Stanford Univ Calif Graduate School of Business
BACKGROUND, PERSONALITY AND VOCATIONAL INTERESTS OF GENERAL MANAGERS.
Technical rept.,
Thomas W. Harrell, and Margaret S. Harrell. 8 Oct 73, 21p Rept no. TR-2
Contract N00014-67-A-0112-0073

Descriptors: (*Leadership, *Industrial relations), (*Supervisory personnel, *Personality), Questionnaires, Background, Aptitude tests, Males, Verbal behavior, Scientific research.
Identifiers: Vocational interests, Managers, *Business management potential.

An effort is being made to develop a valid questionnaire to identify prospective business general managers. The population studied is a group of men among Stanford MBA graduates in seven classes, 1961-67. While in school, these men had been given a nine-instrument battery aimed at manager potential. Three of the instruments, the individual background survey (IBS), SVIB, and GZTS had items that differentiated general managers from non-general managers. A cross validation item analysis was performed on an independent sample that showed substantial shrinkage.

The resultant cross-validated items relate to a measure of energy ascendance, particularly in speaking, speed, and health. (Author)

AD-768 070/5GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
MODELS OF EDUCATIONAL INNOVATION AND IMPLICATIONS FOR RESEARCH,
Robert E. Klitgaard. Mar 73, 29p* Rept no. P-4977

Descriptors: (*Education, *Management engineering), Reviews, Substitutes, Model theory, Organizations, Research program administration.
Identifiers: Innovation(Technology), Public schools, Educational research.

A discussion of innovative methods in education outlines the major logical elements that a theory of innovative behavior should comprise. These are objectives, implementation, production possibilities, and evaluation. Two competing explanatory models are developed, both with the same logical superstructure but with different emphases and parameter values. The paper attempts a step toward the formulation and research of testable propositions about innovation and the schools.

AD-768 075/4GA PC$3.75/MF$1.45
Rand Corp Santa Monica Calif
THE DISSEMINATION OF EDUCATIONAL R AND D PRODUCTS: RESEARCH AND POLICY ISSUES FOR THE FEDERAL GOVERNMENT,
Daniel Weiler. Mar 73, 33p Rept no. P-4984

Descriptors: (*Education, *Research program administration), (*Documentation, Optimization), Problem solving, United States government, Organizations, Efficiency, Management planning, Dissemination.
Identifiers: *Research and development, Policies.

The paper summarizes key problems now faced by education practitioners who wish to use R and D products or information, and the factors that contribute to these problems. It then goes on to consider a general research and policy posture for The National Institute of Education in this area, relevant research topics of interest, and the question of appropriate NIE policy for the short run.

AD-768 079/6GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
THE APPRAISAL OF EDUCATIONAL ALTERNATIVES: MAKING EVALUATION WORK IN CHOOSING FUTURE COURSES OF ACTION,
Sue A. Haggart, and Marjorie L. Rapp. Apr 73, 12p Rept no. P-4990

Descriptors: (*Education, *Management planning), (*Decision making, Substitutes), Reviews, Analysis, Problem solving, Effectiveness.
Identifiers: Alternatives, Evaluation, Projects, State government, Local government.

Educational alternatives may be as narrow in scope as new classroom instructional packages or as extensive as reorganization of schools or completely revised programs of instruction through all grades. Whatever their scope, alternatives are a change in practice. As such, they should be evaluated by looking at the resulting changes in outcome. The discussion is centered on evaluating demonstration programs or alternative practices. The level of decisionmaking involved is either the state or the local level.

AD-768 081/2GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
ARE THERE UNUSUALLY EFFECTIVE SCHOOLS,
Robert E. Klitgaard, and George Hall. Apr 73, 36p* Rept no. P-4995

Descriptors: (*Education, Effectiveness), Statistical analysis, Michigan, New York.
Identifiers: Regression analysis, New York City(New York), Talent project, Schools.

The results of a statistical search for schools capable of increasing educational achievement are presented. No conclusive evidence of superior schools was found once non-school background factors were controlled. However, schools were located which appear deserving of further, more detailed study.

AD-768 168/7GA PC$3.50/MF$1.45
Army Research Inst for the Behavioral and Social Sciences Arlington Va
EFFECTIVENESS OF SELECTION AND CLASSIFICATION TESTING.
Research rept.,
Milton H. Maier, and Edmund F. Fuchs. Sep 73, 58p* Rept no. ARI-RR-1179

Descriptors: (*Aptitude tests, *Army personnel), (*Performance tests, Effectiveness), Psychometrics, Analysis, Classification, Predictions, Reliability, Selection, Military psychology, Performance(Human), Achievement tests.
Identifiers: Army classification battery, Armed forces qualification test, Personnel selection, Qualifications, Validity, Abilities, Personnel screening tests.

Army personnel managers have a continuing need to select, classify, and assign to training and jobs large numbers of men who enter the service. The present publication addresses the value of selection and classification testing programs in relation to job training success and the suitability of the tests for subgroups of the manpower available to the Army. The various testing programs in the Army's enlisted personnel system are described; the relationships between testing program, training content and method, and utilization on the job are probed; and the methodology is explained by which the validity of the tests is established. Analysis of measures of performance in job training programs and ratings of job performance reveals that training performance is more satisfactory than job ratings for evaluating test effectiveness. How well tests predict performance in training programs and the relation between test scores and other indexes of success are examined separately for Negroes and whites. A general criticism of tests, particularly military tests, has arisen in recent years. Analysis supports the usefulness of tests in the Army's personnel systems despite changing concepts in the Army's mission, particularly as the tests themselves are continually reexamined to meet changed requirements. (Modified author abstract)

AD-768 173/7GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
A NOTE ON THE EFFECTIVENESS OF TEACHER EXPERIENCE,
Emmett Keeler, and John McCall. Apr 73, 8p Rept no. P-5010

Descriptors: (*Education, Statistical data), (*Instructors, Effectiveness), (*Students, *Reading), Training, Reviews, Correlation techniques, Mobility, Quality control, Factor analysis.
Identifiers: Teacher experience, Student achievement.

Recent studies have found a significant relationship between student achievement and teacher experience, since schools with high achieving students appear to have a more experienced teaching staff. Also, if teachers move to schools attended by superior test takers, they seldom return to a poorer school. The report makes a study of such mobility in an attempt to discriminate between two possible reasons for the experience vs. reading scores relationship of students.

AD-768 194/3GA PC$3.00/MF$1.45
Battelle Memorial Inst Columbus Ohio
TRAINING TECHNIQUES FOR RAPID TARGET DETECTION,
John R. Powers, III, Robert W. Brainard, Robert E. Abram, and Robert Sadacca. Sep 73, 39p ARI-Technical paper-242
Contract DAHC19-67-C-0035

Descriptors: (*Target discrimination, Training), (*Photointerpretation, *Teaching methods), Military intelligence, Aerial reconnaissance, Performance(Human), Visual perception, Accuracy, Efficiency, Effectiveness.
Identifiers: Speed reading techniques.

Basic to the acquisition of intelligence information from aerial surveillance/reconnaissance sensor products is the ability of the image interpreter to distinguish objects from their background and correctly identify targets on the product imagery. The document reports on the evaluation of two systematic search strategies and a speed-reading technique for use in training interpreters to search imagery more rapidly and to improve detection accuracy and completeness. (Modified author abstract)

AD-768 223/0GA PC$6.25/MF$1.45
Virginia Commonwealth Univ Richmond Dept of Psychology
USES OF VIBRATION IN HELICOPTER FLYING.
Final rept. 1 Dec 68-31 Aug 72,
Glenn R. Hawkes, Gary M. Katz, and William S. Ray. Jul 73, 83p Rept no. PR1-73
Contract DADA17-69-C-9063

Descriptors: (*Sensory perception, *Helicopters), (*Pilots, Training), Performance(Human), Vibration, Noise, Responses, Test methods, Time, Analysis of variance, Attention, Performance tests, Attrition, Accuracy.
Identifiers: Stimulus response, Judgment.

Seven research studies and a summary paper are described in the report. The task situation is that of the helicopter pilot who must maintain visual contact with an environment outside the aircraft, and respond to turbulence and other requirements for control surface adjustments from noise and vibration cues. Time judgments of these cues were studied with findings such as follows: Noise and vibration are judged about equally well in most situations; noisy vs. quiet backgrounds have little effect on performance; when responding to signals, pilots may over-react, or they may underreact if they initiate maneuvers. Other responses are noted and discussed with respect to vibratory and noise stimuli that could be of value, in the training of pilots for operational use of helicopters.

AD-768 327/9GA PC$3.00/MF$1.45
Royal Naval Personnel Research Committee London (England)
THE WORKING ENVIRONMENT IN THE ROYAL NAVY,
E. C. Poulton. Jan 72, 13p Rept no. OES-3/72
DRIC-BR-36647
Report for the Operational Efficiency Subcommittee of the RNPRC.

Descriptors: (*Navy, *Personnel management), (*Naval operations, Environment), Stress(Physiology), Human engineering, Research program administration, Performance(Human), Efficiency, Attrition, Great Britain.
Identifiers: *Work environments, Accident susceptibility.

The article discusses the limits within which the working environment should be maintained. The limits are listed in a table. When the limits are exceeded, there is likely to be a fall in efficiency, an increased susceptibility to accidents, and an increase in absence due to sickness.

AD-768 328/7GA PC$2.75/MF$1.45
Air Force Human Resources Lab Brooks AFB Tex
FACTORS RELATED TO ADAPTABILITY TO MILITARY SERVICE AMONG 1965 AIRMAN ACCESSIONS.
Technical rept.,
Nancy Guinn. Sep 73, 20p Rept no. AFHRL-TR-73-42

Descriptors: (*Air Force, *Aptitude tests), (*Personnel management, *Test construction(Psychology)), Factor analysis, Aging(Physiology), Education, Psychometrics, Reliability, Reviews, Recruiting, Mathematical prediction.
Identifiers: *Screening procedure cautions, AFQT categories, Air Force qualifying tests.

The relationships were investigated between age, educational level, and AFQT scores of the 1965 airman accessions and their reenlistment desirability at the completion of their initial tour. The largest percentage of undesirable enlistees was noted in high school non-graduate, Category 4, and 17-year-old groups. Using three categories of variables, it was found that it would be possible to eliminate 34 percent of the undesirables, although 76 percent of the individuals falling in this three category group actually proved to be successful in their military career. It was emphasized that caution should be used in attempting to establish a screening procedure to identify undersirable enlistees since a significant number of potentially qualitied personnel might be excluded at the same time. (Modified author abstract)

COM-73-11535/4GA PC$3.50/MF$1.45
Hawaii Univ., Honolulu. Office of Marine Programs.
FIRST BIENNIAL REPORT MARINE OPTION PROGRAM.
Sea Grant miscellaneous rept.,
Barry H. Hill. Jun 73, 63p UNIHI-SEAGRANT-MS-73-02 NOAA-73090510
Contract NOAA-2-35243, Grant NSF-GH-93

Descriptors: (*Education, *Oceanography), Students.
Identifiers: Sea Grant program, Marine sciences, Curricula.

The report presents review of students' experience in the program. The marine option program involves undergraduate students from any major field of study in courses and practical marine field activities, leading to the granting of a non-degree certificate indicating proficiency in a marine area upon graduation.

COM-73-11638/6GA PC$3.25/MF$1.45
New Mexico State Dept. of Education, Santa Fe. Trade and Industrial Unit.
TRADE AND INDUSTRIAL TEACHER EDUCATION MOBILE UNIT.
Final rept., 15 Dec 71-15 Feb 73.
Mar 73, 25p FCRC-TA-131-999-013
Prepared in cooperation with Eastern New Mexico Univ., Portales.

Descriptors: (*Instructors, *Personnel development), (*Vocational guidance, *Mobile equipment), (*Education, *New Mexico), Materials, Specialized training, Industrial training, Programmed instruction, Laboratories, Motor vehicles.
Identifiers: Four Corners region, Teacher training, Curriculum development.

A project was funded to relieve the handicaps in administrating a teacher training program in New Mexico. The primary problem was due to an inadequate means of transporting materials and equipment to the area involved. Construction of the mobile teacher training lab improved, maintained, and upgraded trade and industrail instruction by allowing the teacher eductor to transport items to the field that are necessary for effective teacher training.

COM-73-11657/6GA PC$9.00/MF$1.45
Four Corners Regional Commission, Farmington, New Mex.
THE DELTA-MONTROSE AREA VOCATIONAL AND TECHNICAL SCHOOL.
Final rept.,
Jul 73, 136p FCRC-TA-231-299-016

Descriptors: (*Technical schools, *New Mexico), (*Vocational guidance, *Regional planning), Industrial training, Reference groups, Ethnic groups, Adults, Education, Students, Surveys.
Identifiers: Disadvantaged groups, Minority groups. Four Corners region, Adult education, High school students, Counties.

The report represents the completion of specific phases of planning and developmental programming essential to the ultimate construction and operation of an area vocational-technical school in Delta and Montrose Counties, New Mexico.

COM-73-11662/6GA PC$6.50/MF$1.45
New Mexico State Dept. of Education, Santa Fe. Trade and Industrial Unit.
SAN ANTONIO CAREER AWARENESS DEMONSTRATION GRANT.
Final rept.,
Marlys C. Hanson. 30 Jun 73, 89p FCRC-A-332-220-025
Prepared in cooperation with Socorro Consolidated School District, New Mexico.

Descriptors: (*Education, *Industrial training), (*Vocational interests, Development), Children, Employment, Visual aids, Vocational guidance.
Identifiers: San Antonio(New Mexico), Elementary education, Prevocational skills.

The project seeks to provide students of the San Antonia School with exposure to the world of work; to provide stimulation of the student interest and attitude as related to career development; to acquaint elementary teachers with career education as a national concept and to assist them in developing techniques and materials useful in promoting positive associations with the world of work. A secondary goal of the project is to determine if the pre-vocational activities and special interest provided for these students in small groups will affect positively their general achievment.

COM-73-11671/7GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
COMPUTER AIDED INSTRUCTION. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Axel Ringe. Aug 73, 119p* NTIS-WIN-73-043
Supersedes NTIS-PK-110, and NTIS-PK-140.

Descriptors: (*Programmed instruction, *Bibliographies), Education, Computer programming, Training devices, Learning, Input output devices(Computers).
Identifiers: *Computer aided instruction.

The NTISearch bibliography contains 114 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts include studies on computer aided instruction, its use in education, and the hardware and software needed. (Author)

PB-223 872/3GA PC$4.75/MF$1.45
Minnesota Univ., Minneapolis. Water Resource Research Center.
DIRECTORY OF WATER RESOURCES RESEARCH FACULTY AT UNIVERSITY OF MINNESOTA AND STATE AND PRIVATE COLLEGES IN MINNESOTA,
William C. Walton. Aug 73, 51p WRRC-Bull-64 W73-14862, OWRR-A-028-MINN(1)
Contract DI-14-31-0001-4023

Descriptors: (*Instructors, *Directories), (*Water resources, *Research), (*Professional personnel, *Minnesota), Scientists, Universities, Specialized training, Scientific societies, Experience.
Identifiers: *Private colleges, *State colleges.

The directory provides a listing of faculty members at the University of Minnesota and state and private colleges in Minnesota having specialized training and research experience in fields directly related to water resources. A keyword index has been provided to assist in locating faculty personnel having particular specialties.

PB-223 914/3GA PC$7.75/MF$1.45
California Univ., Berkeley. Inst. of Industrial Relations.
THE PROBLEM OF TEENAGE UNEMPLOYMENT.
Final rept.,
Alan A. Fisher. Sep 73, 363p DLMA-91-06-72-21-1
Grant DL-91-06-72-21

Descriptors: (*Unemployment, *Adolescence), Trends, Economic conditions, Manpower, Salaries, Sex, Ethnic groups, Age, Statistical data, Econometrics, Agricultural economics.
Identifiers: Teenage employment, Minimum wages.

The study examines teenage unemployment within an historical, theoretical, and empirical context. Explanations for trends in unemployment and labor force participation are analyzed in terms of economic theory and the mechanisms by which these factors might operate in labor markets. It is demonstrated that the trend of increasing unemployment began during the 1950's and has not affected white males 18-19. Substantial evidence is presented to argue that the lack of correspondence between any teenage age-sex-color group and a relevant labor market is so great that regression analysis based on aggregated labor market data is very unreliable. Turnover, or other such 'voluntary' unemployment explanations currently in vogue, are found to explain little of the increase in unemployment or unemployment differentials among teenage groups. Far more important are involuntary unemployment explanations, especially the rapid mechanization of agriculture and the minimum wage. Even with no minimum wage unemployment for nonwhite teenagers would still present a substantial problem. (Modified author abstract)

PB-223 947/3GA PC$5.25/MF$1.45
North Carolina Manpower Development Corp., Chapel Hill.
MANAGEMENT AWARENESS PROGRAM.
Instructor's manual.
May 72, 183p* DLMA-82-37-71-47-2
Contract DL-82-37-71-47

Descriptors: (*Management training, *Manuals), (*Personnel development, *Specialized training), Management methods, Attitudes, Manpower utilization, Motivation, Projects, Supervision, Reference groups, Facilities.
Identifiers: *Disadvantaged groups, *Management awareness program.

The manual provides a step by step description of how to conduct a management awareness training session. Included are discussions on the target audience, goals, facilities, equipment and materials, staffing, introduction into the client organization, pre-training preparation, group composition, the training schedule and a detailed breakdown of program content. A brief history of the program's development is also provided.

PB-223 957/2GA PC$4.50/MF$1.45
Harvard Univ., Cambridge, Mass.
EXPLORATIONS IN LOW PAY, COLLECTIVE BARGAINING, AND ECONOMIC MOBILITY,
Peter B. Doeringer. Aug 73, 144p* DLMA-81-23-70-08-1
Contract DL-81-23-70-08

Descriptors: (*Labor unions, *Salaries), (*Upgrading, Personnel), (*Unskilled workers, *Bargaining), Economic analysis, Manpower, Females, Negroes, Unemployment, Employment, Labor relations, Mobility.

The economic outcome at the workplace of union activity was studied. A major finding of the study is that unions affect the larger structure of the employment relationship, and that the effect is less strong in the secondary sector (i.e. service industries) than in craft or enterprise situations. In craft employment when work is irregular unions stabilize work through systematic assignment of apprentices and by providing more regular employment for order workers. In production work, there is evidence of redistribution of employment instability from the more senior to the less senior. In building services and the health sector, longevity-related pay and fringe benefits, with higher pay levels and better working conditions, have contributed to the reduction of voluntary turnover. In examining the relationship between low pay, unioninzation and upward mobility, international comparisons suggest that different labor market systems yield patterns of labor market duality similar to those found in the U.S.

PB-224 011/7GA PC$3.50/MF$1.45
New York State Dept. of Labor, Albany. Div. of Research and Statistics.
PROJECT SPRUCE: SPECIAL PROGRAM OF REHABILITATION FOR UNEMPLOYMENT COMPENSATION EXHAUSTEES. VOLUME 1.
Final rept.,
Murray Dorkin, and Herman S. Solomon. May 73, 67p Labor Research-1973-8 DLMA-82-34-69-45
Contract DL-82-34-69-45

Descriptors: (*Manpower utilization, *Rehabilitation), (*Unemployment, Problem solving), (*Benefit plans, Exhausting), Services, Placement, Vocational guidance, Reviews, Effectiveness.
Identifiers: *Spruce project, Special program of rehabilitation for unemployment compensation exhaustees.

Project SPRUCE sought to determine and furnish extra employability services needed by unemployment insurance claimants who seem likely to exhaust their benefit rights, so as to help them take advantage of available job opportunities. The project worked with experimental and control groups of UI claimants who reached their 13th week of unemployment benefits and did not have definite prospects of employment.

PB-224 048/9GA PC$5.25/MF$1.45
Massachusetts Inst. of Tech., Cambridge.
WORK RELATIONSHIP IN THE DELIVERY OF HEALTH CARE: AN ANALYSIS OF THE DIVISION OF LABOR BETWEEN PHYSICIANS AND NURSE PRACTITIONERS IN OUTPATIENT CLINICS.
Final rept.,
Eric L. Herzog. Sep 73, 192p DLMA-91-25-72-46-1
Grant DL-91-25-72-46

Descriptors: (*Medical services, *Medical personnel), (*Nurses, *Manpower utilization), (*Physicians, Manpower utilization), Job satisfaction, Theses, Job analysis, Leadership, Morale.

Focusing on the division of labor between nurses and physicians, the primary questions of this inquiry are what factors are important in determining the relative amount of responsibility the nurse has for specific health services and what are the effects on the quality of service, personal efficacy, and satisfaction of the staff. The findings are that the nurse has more responsibility for certain health services when the physician's leadership style in relationship-oriented, the nurse rates her work relationship high, and the nurse desires more responsibility. Also, the physician's efficacy is negatively related to the amount of the nurse's responsibility, while the nurse's is unrelated; the nurse's satisfaction is positively related to the amount of her responsibility for some services and negatively related for others, while the physician's satisfaction is unrelated; quality of services, as perceived by the nurse and physician, is positively related to the amount of the nurse's responsibility for some health services.

PB-224 126/3GA PC-GPO/MF$1.45
Bureau of Labor Statistics, Washington, D.C.
WAGE CHRONOLOGY: FORD MOTOR COMPANY, JUNE 1941-SEPTEMBER 1973.
Final rept.
1973, 88p DOL-BLS-B-1787
Paper copy available from GPO $1.00 as L2.3:1787.

Descriptors: (*Salary surveys, *Automotive industry), (*Labor relations, Reviews), Bargaining, History, Contracts, Negotiations, Revisions, Classifications, Labor unions, Benefit plans, Allowances, Insurance, Retirement, Statistical data, Rates(Per time).
Identifiers: *Wage chronologies, Ford Motor Company, Hourly wage rates.

The wage chronology summarizes changes in wage rates and related compensation practices negotiated by the Ford Motor Company with the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America since 1941. Materials previously published have been supplemented in this bulletin by contract changes negotiated for 1970-73.

PB-224 129/7GA PC-GPO/MF$1.45
Bureau of Labor Statistics, Washington, D.C.
WAGE CHRONOLOGY: INTERNATIONAL PAPER CO., SOUTHERN KRAFT DIVISION, DECEMBER 1937-MAY 1973.
Final rept.
1973, 34p DOL-BLS-B-1788
Paper copy available from GPO $0.55 as L2.3:1788.

Descriptors: (*Salary surveys, *Papermaking), (*Labor relations, Reviews), Labor unions, Contracts, Negotiations, Classifications, History, Benefit plans, Revisions, Insurance, Retirement, Statistical data, Rates(Per time), Bargaining.
Identifiers: International Paper Company, Southern Kraft Division, *Wage chronologies.

The wage chronology summarizes changes in wage rates and related compensation practices negotiated by the Southern Kraft Division of the International Paper Company with the United Paperworkers International Union (formed in a 1972 merger of the United Papermakers and Paperworkers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers) and the International Brotherhood of Electrical Workers since 1937. Materials previously published have been supplemented by contract changes negotiated in 1970.

PB-224 130/5GA PC-GPO/MF$1.45
Bureau of Labor Statistics, Washington, D.C.
TOMORROW'S MANPOWER NEEDS: RESEARCH REPORT ON MANPOWER PROJECTION METHODS.
Final rept.
1973, 41p DOL-BLS-B-1769
Paper copy available from GPO $0.65 as L2.3:1769.

Descriptors: (*Manpower, Statistical data), (*Employment, *Forecasting), Predictions, Statistical analysis.

The Tomorrow's Manpower Needs series is designed to assist those responsible for making State and area manpower projections which are used in planning, education, training, and vocational guidance. This series has been revised to provide up-to-date information on national projections of manpower requirements and indicate the results of the Bureau's research to improve methods of developing projections.

PB-224 131/3GA PC-GPO/MF$1.45
Bureau of Labor Statistics, Washington, D.C.
INDUSTRY WAGE SURVEY: CONTRACT CLEANING SERVICES, JULY 1971.
Final rept.
1973, 60p DOL-BLS-B-1778
Paper copy available from GPO $0.85 as L2.3:1778.

Descriptors: (*Cleaning, *Services), (*Salary surveys, *Industries), Service contracts, Reviews, Benefit plans, Surveys, Statistical data, Regions, Insurance, Retirement, Labor unions, Classifications, Time, Rates(Per time).
Identifiers: Hours of work, Weekly earnings, Hourly wage rates.

The bulletin summarizes the results of a Bureau of Labor Statistics survey of wages and supplementary benefits in the contract cleaning services industries in July 1971. Data are shown for major geographic regions and selected metropolitan areas.

PB-224 154/5GA PC$3.75/MF$1.45
Illinois Univ., Urbana. Dept. of Computer Science.
ON-LINE FILING (OLF). A PROGRAM PACKAGE FOR STUDENT RECORDS.
Master's thesis,
Edward Mark Lerner. Oct 73, 100p* UIUCDCS-R-73-582

Descriptors: (*Records management, *Data processing), (*Students, Records), FORTRAN, Universities, Counseling, Information retrieval, Computer programming, Search structuring, Computer programs, Theses.
Identifiers: OLF(On Line Filing), On line filing.

OLF is a set of FORTRAN programs which automates the maintenance and use of student records. Processing of information may be done in either batch or interactive mode. OLF is designed to facilitate the expansion of its data processing capabilities.

PB-224 170/1GA PC$9.00/MF$1.45
Ohio State Univ. Research Foundation, Columbus.
DESCRIPTIVE SURVEY OF PART-TIME EMPLOYMENT IN FOOD SERVICES IN OHIO.
Final rept. 1 Jul 70-30 Mar 73,
Rachel M. Hubbard, and Jeanne W. Prodell. Jul 73, 139p DLMA-91-37-70-55-1
Grant DL-91-37-70-55

Descriptors: (*Food services, *Employment), (*Food preparation, *Manpower), Ohio, Surveys, Socioeconomic status, Absenteeism, Attitudes, Job satisfaction, Motivation, Personnel, Unskilled workers.
Identifiers: Part time employment.

To weigh the potential of part-time employment for the food service industy, baseline information concerning its present role in the industry is necessary. Eighty food service firms in four metropolitan areas of Ohio were surveyed to determine the general characteristics of existent part-time employment and the socioeconomic profile of part-time workers. Two major segments

of the food service industry surveyed were the restaurant segment from the commercial sector and the health care segment from the institution sector. Data were collected from both employers and part-time employees in selected firms by structured interviews. Part-time employment averaged 30% of total employment in the sample firms with wide variance among the firms. Skill level of part-time positions, selection criteria, use of in-service training and compensation policies were determined for sample firms in both segments of the industry. Commonalities as well as some great differences among firms and between segments were found. Identity data were collected from the employee sample to contribute to development of a socioeconomic profile of the food service employee. Demographic and job related information were solicited from part-time employees working at the time of the survey. Findings from this survey describe the sample firms well. Further study is needed to determine if trends in part-time employment and the socioeconomic profile of the food service employee revealed by this survey typify the food service industry as a whole.

PB-224 191/7GA PC-GPO/MF$1.45-NTIS
Bureau of Labor Statistics, Washington, D.C.
EMPLOYMENT AND EARNINGS: UNITED STATES, 1909-1972.
Bulletin (Annual).
1973, 750p DOL-BLS-B-1312-9
Paper copy available from GPO $6.40 as L2.3:1329-9.

Descriptors: (*Employment, United States), (*Earnings, Statistical data), Questionnaires, Manpower, Females, Classifications, Statistical analysis, Indexes(Ratios).
Identifiers: Weekly earnings, Hourly earnings, Hours of work, Job vacancies, Labor turnover, Monthly summaries.

The volume contains monthly and annual averages on employment covering all employees, women, and production or nonsupervisory workers. Also shown are average weekly and hourly earnings, average weekly and overtime hours, job vacancies, and labor turnover rates. Seasonally adjusted data are presented for a number of these series as well as indexes of aggregate weekly man-hours and payrolls. Tables on spendable average weekly earnings and average hourly earnings, excluding overtime, are featured also. Data are based on establishment records compiled each month from mail questionaires prepared by BLS, in cooperation with state agencies. The data relate to all workers, full- or part-time, who received pay during the payroll period.

PB-224 248/5GA PC-GPO/MF$1.45
Bureau of Labor Statistics, Washington, D.C.
OUTLOOK FOR TECHNOLOGY AND MANPOWER IN PRINTING AND PUBLISHING.
Final rept.
1973, 53p DOL-BLS-B-1774
Paper copy available from GPO $0.75 as stock no. L2.3:1774.

Descriptors: (*Printing, *Industrial engineering), (*Publishing, *Industrial relations), Manpower, Transformations, Impact, Productivity, Employment, Adjustment(Psychology), Development, Cost analysis, Personnel management, Industrial training, Expectation, Reviews.
Identifiers: Technological change.

The bulletin describes changes in technology in the printing and publishing industry, a major industry employing over 1 million workers. The study focuses on the effect of new technology on productivity, employment, and occupational requirements, and describes methods of adjustment. It includes firsthand information on the impact on production and manpower of electronic computers, phototypesetting equipment, web-offset printing, and other innovations at the nine printing firms which participated in the study.

PB-224 250/1GA PC-GPO/MF$1.45-NTIS
Bureau of Labor Statistics, Washington, D.C.
EMPLOYMENT OF SCIENTISTS AND ENGINEERS 1950-70.
Final rept.
1973, 102p DOL-BLS-B-1781
Paper copy available from GPO $1.25 as stock no. L2.3:1781.

Descriptors: (*Employment, *Scientists), (*Engineers, Employment), Statistics, Surveys.

This bulletin presents comprehensive data on the employment of scientists and engineers from 1950 to 1970 and includes estimates of each major scientific occupational group in all sectors of the economy. Estimates are also presented for scientists and engineers primarily engaged in research and development.

PB-224 253/5GA PC-GPO/MF$1.45-NTIS
Bureau of Labor Statistics, Washington, D.C.
MONTHLY LABOR REVIEW: INDEX OF VOLUMES 84-93, JANUARY 1961-DECEMBER 1970.
Final rept.
1973, 98p DOL-BLS-B-1746
Paper copy available from GPO $1.25 as stock no. L.2.3:1746.

Descriptors: (*Labor relations, *Reviews), (*Periodicals, *Indexes(Documentation)), Subject indexing, Books, Decisions, Authors, Classifications.
Identifiers: Court decisions.

The bulletin provides an index to all material appearing in the Monthly Labor Review from January 1961 through December 1970, except for individual unsigned items appearing in the regular departments.

PB-224 267/5GA PC-GPO/MF$1.45-NTIS
Bureau of Labor Statistics, Washington, D.C.
INDEXES OF OUTPUT PER MAN-HOUR: SELECTED INDUSTRIES, 1973 EDITION.
Final rept.
1973, 178p DOL-BLS-B-1780
See also 1973 Edition, PB-212 670.
Paper copy available from GPO $1.80 as stock no. L2.3:1780.

Descriptors: (*Manpower, *Productivity), (*Output, Statistical data), Indexes(Documentation), Industries, Surveys.
Identifiers: *Man hour output.

This bulletin updates industry indexes of output per man-hour and output per employee (unit labor cost) for the industries currently included in the U.S. Government's productivity measurement program. The data cover the year 1939 and each year from 1947 to 1972. Indexes for steel foundries and ready-mixed concrete industries are added for the first time.

PB-224 268/3GA PC-GPO/MF$1.45-NTIS
Bureau of Labor Statistics, Washington, D.C.
INDUSTRY WAGE SURVEY: LIFE INSURANCE, DECEMBER 1971.
Final rept.
1973, 55p DOL-BLS-B-1791
Paper copy available from GPO $0.85 as stock no. L2.3:1791.

Descriptors: (*Wage surveys, *Industries), (*Life insurance, Industries), Satistical data, Municipalities, Fringe benefits, Benefit plans, Earnings, Policies, Rates(Per time), United States, Regions, Classifications.
Identifiers: Hours of work, *Insurance industry, Occupations, Weekly earnings.

A summary is made of wages and related benefits for employees in home offices and regional head offices of the life insurance industry in December 1971. Data are shown for the United States as a whole and for selected regions, metropolitan areas, and occupations.

PB-224 275/8GA PC-GPO/MF$1.45-NTIS
Bureau of Labor Statistics, Washington, D.C.
INDUSTRY WAGE SURVEY: CIGAR MANUFACTURING, MARCH 1972.
Final rept.
1973, 36p DOL-BLS-B-1796
Paper copy available from GPO $0.65 as stock no. L2.3:1796.

Descriptors: (*Wage surveys, *Industries), (*Tobacco, Industries), Statistical data, Manufacturing, Classifications, Fringe benefits, Benefit plans, Labor unions, Output, Earnings, Contracts, United States, Regions, Urban areas.
Identifiers: Cigars, Hourly earnings.

A summary is made of wages and supplementary benefits of all production and related workers and workers in selected occupations in the cigar manufacturing industry as of March 1972. Data are shown for the United States as a whole and for selected regions and metropolitan areas.

PB-224 388/9GA PC$3.75/MF$1.45
California Univ., Berkeley. Inst. of Industrial Relations.
AN EXPANDED PUBLIC SERVICE EMPLOYMENT PROGRAM: SOME SUPPLY AND DEMAND CONSIDERATIONS.
Final rept.,
Frank Levy, and MichaelWiseman. 9 Jun 71, 88p
DLMA-81-06-72-01(1)
Contract DL-81-06-72-01

Descriptors: (*Employment, *Urban planning), (*Local government, *Manpower utilization), Socioeconomic status, Job analysis, Unskilled workers, Public administration, Services, Government policies, Economic analysis, Feasibility, Municipalities, Benefit cost analysis, Correlations.
Identifiers: Public service employment.

The authors consider the capability of local government to expand the employment of low-skilled workers. They present a profile of workers in several large American metropolitan areas who earned less than $4500 in 1966 and then describe jobs provided by city government in Oakland and San Francisco, California, which could be held by such people. The problem of defining and estimating feasible expansions of useful city employment is discussed. Their results indicate that employment in the cities studied could be expanded 10-15% in low-skilled categories without severe disruption, costly additional inputs, and obvious makework. The relation between the number of jobs potentially available and the supply of low-skilled workers is investigated.

PB-224 406/9GA PC$5.25/MF$1.45
Michigan State Univ., East Lansing. Dept. of Psychology.
DRIVER PERFORMANCE MEASUREMENT RESEARCH. VOLUME 2. GUIDE FOR TRAINING OBSERVER/RATERS IN THE DRIVER PERFORMANCE MEASUREMENTS PROCEDURE. (INCLUDING COURSE AND CONTENT).
Final rept.,
R. O. Nolan, F. E. Vanosdall, and D. L. Smith. Jul 73, 187p* DOT-HS-800 882
Contract FH-11-7627
See also PB-222 643.

Descriptors: (*Motor vehicle operators, Ratings), (*Performance evaluation, Manuals), Specialized training, Objectives, Methodology, Penalties, Recommendations, Abilities, Behavior, Pattern recognition, Programmed instruction, Psychology, Roads, Urban areas.
Identifiers: Behavioral environmental traffic situational sequences, Observer raters.

The Final Report, Volume 1, covers research results of the Michigan State University Driver Performance Measurement project. This volume (Final Report, Volume 2) constitutes a guide for training observer/raters in the driver performance measurement procedures developed in the research. It includes a training course plan and the materials used and evaluated in training driver education practitioners to observe and rate the adequacy and safety of driver behavior patterns in selected Behavioral-Environmental-Traffic-Situational-Sequences (BETSS) and their sub-divisions (SubBETSS).

TT-72-51009/04/GA PC$3.75/MF$1.45
Office of Education, Washington, D.C.
INDIAN EDUCATIONAL MATERIAL. VOLUME 7, NUMBER 4, DECEMBER 1972. CONTAINS A SPECIAL SECTION: AGRICULTURAL EDUCATION - II. (ABSTRACTS NOS. A83-A106).
Annotated quarterly bibliography Oct-Dec 72,
A. Joseph. 1972, 82p
The above journal is translated on a regular basis. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: (*India, Education), (*Education, *Bibliographies), (*Agriculture, Education), Management, Programmed instruction, Research, Sociometrics, Test methods, Classifications, Counseling, Instructors, Policies, Planning, Students, Translations.
Identifiers: Annotated bibliographies, Agricultural education.

The bibliography contains educational psychology, research and sociology, teaching and testing methods, administration and planning, guidance and counseling, curricula and teacher education, and allied topics.

TT-72-54010/2/GA PC$3.50
Office of Education, Washington, D.C.
SELECTED BIBLIOGRAPHY OF POLISH EDUCATIONAL MATERIALS. VOLUME 11, NUMBER 2, 1972.
1973, 60p
Trans. by Hanna Komorowska-Piskorowska. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: (*Education, *Poland), (*Bibliographies, Education), Reviews, History, Law, Statistical data, Social sciences, Instructors, Organizations, Schools, Translations.
Identifiers: Annotated bibliographies.

Contents: History of education, laws and legislation, general information, social and educational sciences, teachers, and schools and institutions by type or level.

TT-72-55145/01/GA PC$3.00/MF$1.45
Department of Health, Education and Welfare, Washington, D.C.
SELECTED BIBLIOGRAPHY OF EDUCATION ANAL MATERIALS: ALGERIA, LIBYA, MOROCCO, AND TUNISIA. VOLUME 6, NUMBER 1, 1972,
Azzedine Azzouz, Christiane Djemili, and Margaret Duggan Saidi. 1972, 41p
The above journal is translated on a regular basis. Sponsored in part by National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: (*Education, *North Africa), (*Bibliographies, Education), Algeria, Theories, Organizing, Classifications, Libya, Management planning, Tunisia, Organizations, Programmed instruction, Morocco, Schools, Problem solving, Translations.
Identifiers: Maghreb.

Combatting illiteracy, preparing isolated youth with little cultural background, and adapting to a multilingual situation are the major factors influencing educational philosophy in the Magreb. The bibliography contains materials on educational planning and organizing in the countries of North Africa.

5J. Psychology (Individual and Group Behavior)

AD-767 692/7GA PC$6.00/MF$1.45
Naval Postgraduate School Monterey Calif
VERBAL DISCRIMINATION LEARNING IN A RANDOM MIXTURE OF TWO-, THREE-, AND FOUR-WORD ITEMS WITH TWO STIMULUS PRESENTATION RATES.
Master's thesis,
Temotio Espina Bugarin, Jr. Sep 73, 76p

Descriptors: (*Learning, *Verbal behavior), Psychometrics, Statistical analysis, Analysis of variance, Theses.
Identifiers: *Verbal learning, *Discrimination learning, Stimulus(Psychophysiology), Information processing(Psychology).

The purpose of the experiment was to determine whether a constant information processing rate would occur when subjects in verbal discrimination (VD) learning were presented a mixture of items of different lengths. Forty-two Naval Postgraduate School students served in a VD experiment with a random mixture of two, three, and four word items at presentation rates of 1/2 or 1/4 bits of information per second. Half the items had similar and 1/2, dissimilar words. The VD list had six each, of two, three, and four word items resulting in six bits of information for the two word items, 9.51 bits for the three word items, and 12 bits for the four word items for an overall presentation load of 27.51 bits of information. The information content of two, and three word items was normalized to agree with the 12 bit base of four word items for analysis. The similarity variable was disregarded, since it was not significant as a main effect. The results showed that, at each presentation rate, two, three, and four word items were learned at the same information processing rate. Moreover, the interaction between presentation rate and blocks of trials showed an expected multiplicative function such that the performance of one group could be predicted with 93.5% accuracy. (Author)

AD-767 708/1GA PC$3.75/MF$1.45
Wichita State Univ Kans Center for Human Appraisal and Communication Research
THE EFFECT OF SELECTED BEHAVIORAL CHARACTERISTICS ON THE RATING PROCESS,
George M. Beason, John A. Belt, and Dan L. Costley. 13 Jul 73, 76p* AFOSR-TR-73-1695
Contract AF-AFOSR-71-2001

Descriptors: (*Air force personnel, Performance(Human)), Reports, Accuracy, Statistical processes, Reviews, Analysis of variance.
Identifiers: *Performance evaluation, *Officer effectiveness reports, *Airman performance reports.

Inflated ratings continue to be the dominant observable defect in the use of OERs and APRs as decision tools in the Air Force. This study examines the problem of rating inflation and some of the possible sources of inflation. Findings indicate how experienced raters are not significantly different from non-raters in terms of their personalities and their superior/subordinate role style preferences, although there is a significant difference in the rating behavior of the two groups when they rate written descriptions of selected personality factors and superior/subordinate role styles. (Modified author abstract)

AD-767 716/4GA PC$3.00/MF$1.45
California Univ San Diego La Jolla Center for Human Information Processing
COGNITIVE ORGANIZATION AND LEARNING.
Technical rept.,
Donald A. Norman. Aug 73, 37p
Contract N00014-69-A-0200-6045, ARPA Order-2284

Descriptors: (*Learning, Factor analysis), Theory, Psychometrics, Reviews, Time, Memory, Semantics.
Identifiers: *Cognition, *Understanding.

In learning complex material, one must first understand the material, after which learning and remembering follow automatically. The conventional psychological literature says little about the processes involved in the learning of complex material which may take weeks, months, or years to be learned, although most adult learning is of this form. The paper examines some of the issues that are involved in this type of learning, issues such as the nature of understanding, the types of hypotheses that subjects bring to bear on the learning process, and the types of processes that need to be studied in order to understand the psychology of learning.

AD-767 718/0GA PC$3.75/MF$1.45
Johns Hopkins Univ Baltimore Md Dept of Psychology
CONDITIONS FOR IMPROVING VISUAL INFORMATION PROCESSING.
Technical repts.,
Howard Egeth, Janette Atkinson, Grover Gilmore, and Norman Marcus. Jul 73, 76p Rept nos. TR-73, TR-74
Contract N00014-67-A-0163-0012
Also includes Technical repts. no. 75 and 76.

Descriptors: (*Detection, *Visual acuity), (*Reaction(Psychology), *Performance tests), Data processing systems, Factor analysis, Performance(Human), Attention, Optimization.
Identifiers: *Information processing(Psychology), *Vigilance tasks, Visual search.

Four experiments concerned with human information processing are reported. The first investigates a number of factors that may affect performance on a visual search task. On the basis of the data all current models of visual search seem incomplete. The second experiment examined some stimulus parameters that influenced detection performance in a vigilance task. Some recommendations of potentially practical significance may be made on the basis of these results. The third experiment studied some cognitive aspects of the control of selective attention. The fourth, a Ph.D. thesis, uncovered evidence for two rather different modes of perceptual processing: analytic and structural. (Author)

AD-767 794/1GA PC$4.25/MF$1.45
System Research Ltd Richmond (England)
STRATEGIC DISPOSITION TESTS AND THE INFLUENCE OF LEARNING STRATEGY ON THE PERFORMANCE AND BREAKDOWN OF SKILLS.
Final rept. 1 May 72-30 Apr 73,
Gordon Pask, and Bernard C. E. Scott. 30 Jun 73, 45p AFOSR-TR-73-1697
Contract F44620-72-C-0091

Descriptors: (*Learning, *Performance(Human)), Personality, Pattern recognition, Performance tests, Stress(Psychology), Reliability, Great Britain.
Identifiers: *Learning styles, Versatility, Stress Tasks, Individual differences, Serialists, Holists.

The project has been concerned with (1) designing a test battery to determine an individual's preferred learning and performance strategy and (2) investigating task breakdown under load induced stress; in particular, examining the in-

fluence of an individual's strategic disposition on his ability to fall back upon previously learned modes of performance. Test procedures have been specified and their reliability and validity are evaluated empirically. A stress task has been designed and the necessary equipment constructed. (Author)

AD-767 856/8GA Not available NTIS
Manitoba Univ Winnipeg
EFFECT OF PROLONGED MONOCULAR DEPRIVATION (HOMOGENEOUS ILLUMINATION) ON THE CFF OF THE NONOCCLUDED AND OCCLUDED EYE,
John P. Zubek, and Michael Bross. 30 Jan 72, 3p
Revision of report dated 1 Jun 72.
Availability: Pub. in the Perception and Psychophysics, v13 n3 p499-501 1973.

Descriptors: (*Sensory deprivation, *Eye), (*Visual perception, Sensory deprivation), Performance(Human), Light, Stimulation, Vision.
Identifiers: *Critical flicker fusion, Critical frequencies.

Since previous research has shown that the exposure of one eye to a prolonged period of darkness produces an initial depression followed by an enhancement of the critical flicker fusion frequency (CFF) in the nonoccluded eye, an attempt was made to determine whether a similar phenomenon could be demonstrated by using diffuse, homogeneous illumination as the monocular condition. Two experiments were conducted, in which the CFFs of the nonoccluded and the occluded eyes were measured before and then at various intervals during 3 days of unpatterned visual stimulation. No significant changes in performance were observed in either eye. It was concluded that the production of this unusual interocular effect is dependent upon an absence of visual stimulation per se rather than upon an absence of pattern vision. The results were related to Sharpless's (1964) concept of 'disuse of neural pathways,' a revision of the law of denervation. (Author)

AD-768 018/4GA PC$3.00/MF$1.45
Northwestern Univ Evanston Ill
A COMPARISON OF THE EFFECTS OF FORMAL SIMILARITY AMONG TRIGRAMS AND AMONG WORD TRIADS.
Technical rept.,
Benton J. Underwood, and Joel Zimmerman. Sep 73, 27p
Contract N00014-67-A-0356-0010

Descriptors: (*Learning, *Performance tests), (*Recall, *Test construction(Psychology)), Word association, Test methods, Analysis of variance, Semantics, Reaction(Psychology).
Identifiers: *Learning tasks, Trigrams, Word triads, Similarity, Word lists.

The central question of the report concerns the role of formal similarity in free recall of lists of trigrams and lists of three-letter word triads. Similarity was manipulated among trigrams by duplicating letters, and among triads by duplicating words. An initial study showed that lists of 16 letters were learned more rapidly than a list of 16 three-letter words. Therefore, in the major experiment, the Ss were given all appropriate elements on test trials so that only associative learning was required. The learning of the trigram lists was more rapid than the learning of the triad lists, the difference being maximal with low similarity. (Modified author abstract)

AD-768 019/2GA PC$3.00/MF$1.45
Northwestern Univ Evanston Ill
THE LOCUS OF THE RETENTION DIFFERENCES ASSOCIATED WITH DEGREE OF HIERARCHICAL CONCEPTUAL STRUCTURE.
Technical rept.,
Benton J. Underwood, John J. Shaughnessy, and Joel Zimmerman. Sep 73, 43p
Contract N00014-67-A-0356-0010

Descriptors: (*Retention, *Word association), (*Learning, *Performance tests), Test methods, Correlation techniques, Students, Factor analysis, Universities.
Identifiers: *Paired associate learning, Stimulus response, Concept formation, Word lists.

The intent of the study was to identify more precisely the characteristics of the memory for structured and unstructured lists. By so doing it was believed that the characteristic or characteristics responsible for the differences in retention might be isolated. Two different levels of learning were used as a means of varying the degree to which the conceptual structure had become a part of the memory for the lists. Since the utilization of a conceptual structure to mediate item placement at the time of retention may be critically time dependent, three different types of retention tests were used, namely, paced and unpaced recall, and unpaced associative matching.

AD-768 020/0GA PC$3.75/MF$1.45
Northwestern Univ Evanston Ill
THE ROLE OF THE ASSOCIATION IN RECOGNITION MEMORY.
Technical rept.,
Benton J. Underwood. Sep 73, 76p
Contract N00014-67-A-0356-0010

Descriptors: (*Word association, Performance tests), Performance(Human), Scientific research, Frequency, Memory, Classification, Decision making.
Identifiers: Word lists.

The purpose of eight experiments was to assess the role which associations between two words played in recognition decisions. The evidence on weak associations established in the laboratory indicated that the association was playing a small role, but that recognition performance on pairs of words was highly predictable from frequency information. However, the use of strongly associated words indicated that the strength of the association per se was not a critical variable in recognition performance. A post hoc expansion of frequency theory was proposed. Some unexpected findings included criterion differences in making frequency judgments as compared with recognition decisions, and criterion differences in recognition tests on homonym pairs as compared with other classes of word pairs. (Author)

AD-768 036/6GA PC$3.75/MF$1.45
Washington Univ Seattle Dept of Psychology
SITUATIONAL FAVORABILITY AND PERCEIVED ENVIRONMENTAL UNCERTAINTY: AN INTEGRATIVE APPROACH.
Technical rept.,
Delbert M. Nebeker. 25 Sep 73, 35p Rept no. TR-73-48
Contract N00014-67-A-0103-0012

Descriptors: (*Leadership, Mathematical models), (*Organizations, Leadership), Behavior, Theory, Scientific research, Uncertainty, Decision making, Perception(Psychology), Reviews.
Identifiers: *Contingency leadership models.

Modern organizational and leadership theorists are recognizing that there is no one best way to lead or organize work groups. Instead recent developments indicate that the best organizational form or leadership style is contingent upon its appropriateness to the situation or environment. The paper presents an empirical test of one possible integration of Fiedler's contingency model of leadership effectiveness and Lawrence and Lorsch's contingency organization theory. (Modified author abstract)

AD-768 114/1GA PC$4.50/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
EFFECTS OF A VARYING ENVIRONMENT ON THE PERFORMANCE OF AN INSPECTION TASK.
Research rept.,
Kenneth D. Gurley. Jul 71, 49p Rept no. USAMC-ITC-2-71-22

Descriptors: (*Performance tests, Visual inspection), (*Attention, Optimization), Test methods, Test equipment, Feasibility studies, Industrial relations, Accuracy, Reviews, Environment.
Identifiers: *Vigilance tasks, Inspection tasks.

Research has shown that the decrement associated with a vigilance task can be reduced or eliminated, but some of the techniques used to reduce this vigilance decrement are not practical for industrial use. An experiment, utilizing a technique that could be adapted for use in industry is reported.

AD-768 126/5GA PC$4.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
LEARNING CURVE DEMONSTRATION,
Edward T. Martin. May 73, 51p Rept no. USAMC-ITC-1-73-10

Descriptors: (*Learning, *Performance tests), (*Learning curves, Test methods), Test methods, Time, Performance(Human), Statistical analysis.
Identifiers: Puzzle tasks, Assembling tasks, Difficulty levels, *Familiarization.

The research is designed to answer the questions of whether or not increased familiarity with a given system enables a person to perform a system related task in less time; and whether or not relative difficulty of a task is a determinant of the time required to perform the task. Test devices in the form of four jigsaw puzzles were constructed. Twenty male subjects assembled these four different puzzles seven times each and the times required to assemble were recorded. Conclusions are drawn.

AD-768 132/3GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
A MAINTENANCE INCENTIVE PLAN BASED ON TIME AND QUALITY INDIFFERENCE,
Richard L. Spitzer, and Joseph W. Foster. May 73, 77p Rept no. USAMC-ITC-1-73-20

Descriptors: (*Maintenance personnel, *Motivation), Time studies, Quality control, Job analysis, Performance(Human), Wages.
Identifiers: *Incentives, Salary administration.

An incentive plan for maintenance workers under which management will pay the men on the basis of both the time and the quality of their work is developed. Standard data are employed as the method of measuring time, and the concept of different types of defects yields a method of measuring quality. A review of the history of maintenance incentive plans leads to the idea of consumer indifference as the basis of the proposed plan. The indifference incentive plan for maintenance workers is then developed, and an example of such a plan is presented and discussed. Problems associated with the implementation of the new incentive plan in industry are discussed, and possible topics of future research are mentioned. (Modified author abstract)

AD-768 171/1GA PC$3.00/MF$1.45
Army Aviation Systems Test Activity Edwards AFB Calif
STUDY - PILOT PERCEIVED JETTISON ENVELOPE.
Final rept.,
Albert L. Winn, and James S. Kishi. Jun 73, 28p Rept no. USAASTA-71-03

Descriptors: (*Pilots, Perception(Psychology)), (*Helicopters, Sideslip), (*Jettisonable equipment,

Helicopters), Army aircraft, External stores, Flight testing, Flight paths, Stability, Aerodynamic characteristics.
Identifiers: H-6 aircraft, OH-6A aircraft, H-58 aircraft, OH-58A aircraft, H-56 aircraft, AH-56A aircraft.

The OH-6A, OH-58A, and AH-56A helicopters were evaluated to determine pilot sensed sideslip cues with respect to their influence on the jettison of external stores. The data were necessary to confirm previous studies with the UH-1C and CH-47C helicopters, and to expand the data to other helicopters and operating conditions. Tests were conducted at the United States Army Aviation Systems Test Activity, Edwards Air Force Base, California and at Yuma Proving Ground, Arizona. Additionally, data previously obtained for other test helicopters were analyzed to determine variation in static lateral-directional stability with altitude, gross weight, rotor speed, and center-of-gravity location. Results fconfirm that side force is the most significant cue to pilot recognition of uncoordinated flight. The pilots' evaluation of side force was consistent for all aircraft and all test cases. During this evaluation, the pilots recognized lower side force values than during the UH-1C and CH-47C evaluations. Data analysis shows helicopter side-force characteristics to be relatively independent of atmospheric or operating conditions other than airspeed and sideslip angle. Helicopter lateral-directional stability characteristics and pilot recognition of side force can be combined to predict a minimum required jettison envelope for theoretical or actual flight vehicles. This procedure can be used for early definition of problem areas and to reduce the cost and risk associated with establishing flight envelopes. (Author)

AD-768 263/6GA Reprint
Northwestern Univ Evanston Ill Dept of Psychology
SERIAL RETENTION AS A FUNCTION OF HIERARCHICAL STRUCTURE,
Benton J. Underwood, and Joel Zimmerman. 11 Aug 72, 9p
Contract N00014-67-A-0356-0010
Availability: Pub. in Jnl. of Experimental Psychology, v99 n2 p236-242 1973.

Descriptors: (*Learning, *Performance(Human)), (*Retention, *Performance tests), Behavior, Scientific research, Word association, Theory, Sequences.
Identifiers: *Conceptual habits, Paired associate learning, Word lists, Hierarchical structure.

Descriptively speaking, in mastering a serial list S must learn to place an item in its specified position within the series of items. Just how this is accomplished is a matter of some uncertainty, but it was not the matter of direct interest in the present study. The report involves whether certain conceptual habits which S brings to the laboratory will influence the learning and retention of a serial list.

AD-768 265/1GA Reprint
Human Engineering Lab Aberdeen Proving Ground Md
IMAGERY AND INTERFERENCE IN SEQUENTIAL SHORT-TERM MEMORY.
Technical memo.,
Richard A. Monty, Robert Karsh, and Harvey A. Taub. 3 Oct 72, 12p Rept no. HEL-TM-17-73
Availability: Pub. in Canadian Jnl. of Psychology, v27 n2 p220-226 1973.

Descriptors: (*Retention, Interference), (*Performance tests, Memory), Test methods, Colors, Visual signals, Sequences, Test equipment.
Identifiers: *Information processing(Psychology), Irrelevant information, Stimulus(Psychophysiology), Short term memory.

An experiment was conducted to study the disruptive effects of irrelevant information (names of colors) superimposed on relevant information (bands of colors) as compared with the effects of irrelevant information occupying the interval between stimuli. It was found that irrelevant information disrupted performance only when it occupied the interval between stimuli, suggesting that interference was primarily with the rehearsal process and not with the perceptual process. The results are discussed in terms of visual imagery and the spatial window model of keeping-track performance. (Modified author abstract)

JPRS-60091/GA PC$18.00/MF$1.45
Joint Publications Research Service, Arlington, Va.
THE MECHANISMS AND PRINCIPLES OF GOAL-DIRECTED BEHAVIOR,
P. K. Anokhin. 21 Sep 73, 316p
Trans. of mono. Mekhanizmy i Printsipy Tselenapravlennogo Povedeniya, Moscow, 1972 296.

Descriptors: (*Human behavior, Statistical analysis), (*Psychometrics, USSR), Mathematical models, Psychology, Objectives, Performance tests, Nervous system, Motivation, Emotions, Translations.
Identifiers: Neurophysiology.

The report contains works in three fields: The mathematical description and modeling of goal-directed behavior; the experimental investigation of behavioral goal-directed reactions; and the precise neurophysiological study of the mechanisms that effect goal-directed behavior, primarily the motivations and emotions.

PB-223 924/2GA PC$3.75/MF$1.45
Rehabilitation Research Foundation, Elmore, Ala. Experimental Manpower Lab. for Corrections.
A MANUAL FOR THE USE OF THE ENVIRONMENTAL DEPRIVATION SCALE (EDS) IN CORRECTIONS: THE PREDICTION OF CRIMINAL BEHAVIOR,
W. O. Jenkins, and W. Lee Sanford. Oct 72, 79p DLMA-82-01-69-06-10
Contract DL-82-01-69-06

Descriptors: (*Criminal psychology, *Psychometrics), (*Criminology, Predictions), Manuals, Employment, Interpersonal relations, Cultural deprivation.
Identifiers: *Environmental deprivation scale, EDS(Environmental Deprivation Scale).

The Environmental Deprivation Scale (EDS) is a behavioral assessment instrument based on the relationship between environmental support and behavior. The manual explains the use of the EDS in corrections to predict law violation and resultant recidivism, facilitating intervention planning. It includes information on behavioral interview techniques, scoring the instrument, interpretation of score, and validity and reliability data. An appendix section includes interview excerpts for EDS items which are sometimes difficult to score.

PB-224 333/5GA PC$6.25/MF$1.45
Boston Coll., Chestnut Hill, Mass. Dept. of Philosophy.
WORK AND MEANING: A PHENOMENOLOGICAL INQUIRY.
Final rept. Jun 71-Sep 73,
Charles M. Savage. 29 Sep 73, 269p DLMA-91-25-71-38-1
Contract DL-91-25-71-38
Doctoral thesis.

Descriptors: (*Work, Significance), (*Philosophy, Work), Concepts, Job satisfaction, Productivity, Definitions, Recognition, Growth, Performance, Attitudes, Variations, Human behavior, Theses.
Identifiers: Responsibility, Phenomenology.

The report inquires into what is human work and what makes it a significant or insignificant human venture. Part One explores how an activity (such as work) becomes humanly significant or meaningful. Meaning-growth is a function of human time-consciousness as distinguished from clock time. Part Two examines the essential nature of human work as a form bestowing activity which is both accusative and reflexive. Responsibility, recognition, variety and growth are related to human work modules, and are seen as a help to overcome the alienation, anomie and atonie of the industrial work world.

5K. Sociology

AD-768 014/3GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
PROFESSIONAL STUDIES IN SOCIAL WORK WITH EMPHASIS ON SOCIAL DEVIATION AND CRIMINOLOGY: AN EVALUATION AT THE UNIVERSITY OF PUERTO RICO,
Bernard Cohen, Marc Riedel, Porfirio Diaz Santana, and Raul Munoz. Feb 73, 16p Rept no. P-4959

Descriptors: (*Sociometrics, *Universities), (*Research program administration, *Puerto Rico), Reviews, Criminology, Abnormal psychology, Programmed instruction, Experimental data.
Identifiers: *Social deviation, Evaluation, Interviews.

The document contains an evaluation of the first semester of a special project undertaken by the Graduate School of Social Work, University of Puerto Rico in 1972. The evaluation report includes recommendations for future project development and implementation. (Modified author abstract)

AD-768 074/7GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
REVIEW OF PETER H. ROSSI AND WALTER WILLIAMS' AND POLITICS (SEMINAR PRESS, NEW YORK AND LONDON, 1972),
Robert A. Levine. Mar 73, 8p Rept no. P-4982

Descriptors: (*Sociometrics, *Management engineering), (*Social sciences, *Reviews), Scientific research, Factor analysis, Effectiveness, Inequalities.
Identifiers: Policies, Evaluation, Project planning.

A report is made on a collection of readings on evaluation of social policies, with some discussion of policy making in general and some notice of deficiency.

AD-768 103/4GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
IT'S NOT OVERPOPULATION: IT'S THE PEOPLE,
Peter A. Morrison. May 73, 14p Rept no. P-5004

Descriptors: (*Population, Predictions), Reviews, Factor analysis, United States, Sociometrics, Fertility, Attitudes.
Identifiers: Demography.

Americans appear to be in the midst of a major overhaul of fertility norms and behavior, but the pendulum of family-size aspirations may swing either way. Today's children represent a great potential of mothers and fathers who have yet to be heard from. Their fertility could return to previous high levels; or it could decline further than the present level.

COM-71-80003/GA PC-GPO/MF-NTIS/state
CENSUS OF HOUSING: 1970. GENERAL HOUSING CHARACTERISTICS.
1971-72,58 issuesCENSUS-70-HC(1)-A1--CENSUS-70-HC(1)-A58

Paper copy available from GPO $61.35/set of 58 reports as C3.224/3:967; microfiche available from NTIS $84.10/set of 58 reports.

The reports present data from the 1970 Census for the following geographic identifications: the state (by urban and rural residence), standard metropolitan statistical areas, urbanized areas, places of 1,000 inhibitants or more, and counties. Statistics are available on such items as tenure, plumbing facilities, number of rooms, persons, vacancy status, value of property, and contract rent. For prices of individual reports, see below:

CENSUS-70-HC(1)-A53. Puerto Rico. Jan 72, 115p, PC-GPO$1.00, MF$1.45-NTIS

COM-71-80011/GA PC-GPO/MF$349.45-NTIS
CENSUS OF POPULATION: 1970. CENSUS TRACTS.
Final repts.
1972,241 issuesCENSUS-70-PHC(1)-001--CENSUS-70-PHC(1)-24
Paper copy available from GPO $294.60/set of 241 reports as C3.233/11:970.

The reports present 1970 census statistics by census tracts on the characteristics of the population and housing units in standard metropolitan statistical areas (SMSA's). Social, labor force, and income characteristics of the population as well as occupancy, utilization, structural equipment, and financial characteristics of housing units are presented in tabular form for component counties, for places of 25,000 or more in the SMSA, and for individual tracts. In addition, for census tracts with Negro and/or Spanish population of specified size, the reports present data on selected population and housing subjects for these groups. For prices of individual reports, see below:

CENSUS-70-PHC(1)-023. Billings, Mont. Standard Metropolitan Statistical Area. Dec 71, 63p, PC-GPO$0.50 MF$1.45-NTIS

COM-71-80013/GA PC-GPO/MF$76.85-NTIS
CENSUS OF POPULATION: 1970. DETAILED CHARACTERISTICS.
Final repts.
1972-73,53 issuesCENSUS-70-PC(1)-D01-CENSUS-70-PC(1)-D53
Paper copy available from GPO $240.00/set of 53 reports as C3.223/8:970.

The reports present official 1970 statistics for detailed characteristics of the population for the states. The data are cross-classified by age, sex, and other characteristics and cover the following: nativity; place of birth; country of origin; parentage; citizenship; mother tongue; year moved into present house; residence in 1965; school enrollment; years of school completed; vocational training; veteran status; marital history; families and their composition; fertility; work disability; employment status; weeks worked in 1969; activity five years ago; place of work; occupation; industry; class of worker; income; and poverty status. In addition, for areas with Negro and/or Spanish population of specified size, the reports present selected data for these groups. For prices of individual reports, see below:

CENSUS-70-PC(1)-D04. Arizona. Jul 72, 632p, PC-GPO$4.50, MF$1.45-NTIS
CENSUS-70-PC(1)-D07. Colorado. Jul 72, 529p, PC-GPO$3.50, MF$1.45-NTIS
CENSUS-70-PC(1)-D20. Louisiana. Jul 72, 755p, PC-GPO$5.50, MF$1.45-NTIS
CENSUS-70-PC(1)-D29. Nebraska. Aug 72, 452p, PC-GPO$3.25, MF$1.45-NTIS
CENSUS-70-PC(1)-D46. Utah. Jul 72, 438p, PC-GPO$3.50, MF$1.45-NTIS

COM-71-80019-01/GA PC-GPO/MF$1.45-NTIS
Bureau of the Census, Washington, D.C.
CENSUS OF HOUSING: 1970. SUBJECT REPORTS: HOUSING CHARACTERISTICS BY HOUSEHOLD COMPOSITION.
Feb 73, 645p CENSUS-70-HC(7)-01
Paper copy available from GPO $5.90 as C3.224/10:970/1.

Descriptors: (*Census, *United States), (*Residential buildings, Statistical data), Value, Leasing, Prices, Income, Tables(Data).
Identifiers: Household characteristics, Standard metropolitan statistical areas.

The data presents cross-tabulations of housing and household characteristics from the 1970 Census of Population and Housing for the United States, by inside and outside standard metropolitan statistical areas (SMSA's). Detailed tables show data on: Value of owner-occupied housing units; gross rent of rent-occupied housing units; income in 1969 of families and primary individuals in owner- and renter-occupied housing units; and year structure built and the number of units in structure for owner- and renter-occupied housing units. Data are for all household heads, with separate details for Negro heads of households, and for those of Spanish heritage. Four appendixes are included in the report.

COM-71-80019-03/GA PC-GPO/MF$1.45-NTIS
Bureau of the Census, Washington, D.C.
CENSUS OF HOUSING: 1970. SUBJECT REPORTS: SPACE UTILIZATION OF THE HOUSING INVENTORY.
May 73, 470p CENSUS-70-HC(7)-03
Paper copy available from GPO $4.55 as C3.224/10:970/3.

Descriptors: (*Census, *United States), (*Residential buildings, Statistical data), Income, Leasing, Prices, Value, Tables(Data).
Identifiers: Household characteristics, Standard metropolitan statistical areas.

The report presents data on space utilization of the housing inventory cross-classified by various housing and household characteristics. Data are from the 1970 Census of Housing and are shown for the United States by inside and outside standard metropolitan statistical areas. Data are provided for owner-occupied and renter-occupied housing units, with Negro head of household and with household head of Spanish language. These data are cross-classified by such characteristics as: utilization, structural and plumbing, financial, household, and on equipment and appliances. The report also includes a general summary concerning the data and four appendixes providing area classifications, definitions and explanations of subject characteristics, accuracy of the data, and a publication and computer summary tape program for the 1970 Census of Population and Housing.

COM-71-80020/GA PC-GPO/MF$23.20-NTIS
CENSUS OF HOUSING: 1970. COMPONENTS OF INVENTORY CHANGE.
1973,16 issuesCENSUS-70-HC(4)-01--CENSUS-70-HC(4)-16
Paper copy available from GPO $23.55/set of 16 reports as C3.224/6:970/V4.

The reports (one for the United States by regions and one for each of 15 selected metropolitan areas) focus on the source of the 1970 inventory, and the disposition of the 1960 inventory in terms of such changes as new construction, conversion, merger, and demolition. Characteristics are shown for both changed and unchanged units. For unchanged units the 1970 characteristics are cross-tabulated for tenure and race, condition and plumbing, value, gross rent, and persons per room. For new construction units, selected characteristics are cross-tabulated by value, gross rent, number of rooms, and income. Also presented are characteristics of present and previous residences of recent movers or household heads who moved in 1969 or later. For prices of individual reports, see below:

CENSUS-70-HC(4)-01. United States and Regions. Jun 73, 506p, PC-GPO$4.80, MF$1.45-NTIS
CENSUS-70-HC(4)-02. Atlanta, Ga. Standard Metropolitan Statistical Area. May 73, 114p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-03. Boston, Mass. Standard Metropolitan Statistical Area. May 73, 113p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-04. Buffalo, N.Y. Standard Metropolitan Statistical Area. May 73, 113p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-05. Chicago, Ill. Standard Metropolitan Statistical Area. May 73, 113p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-06. Cleveland, Ohio. Standard Metropolitan Statistical Area. Jun 73, 113p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-07. Detroit, Mich. Standard Metropolitan Statistical Area. May 73, 113p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-08. Houston, Tex. Standard Metroplitan Statistical Area. Jun 73, 114p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-09. Los Angeles-Long Beach, Calif. Standard Metropolitan Statistical Area. May 73, 114p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-10. Miami, Fla. Standard Metropolitan Statistical Area. May 73, 114p, PC-GPO$ 1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-12. Philadephia, Pa.-N.J. Standard Metropolitan Statistical Area. May 1973, 114p, PC-GPO$ 1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-13. St. Louise, Mo.-Ill. Standard Metropolitan Statistical Area. May 73, 114p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-14. San Francisco-Oakland, Calif. Standard Metropolitan Statistical Area. May 73, 114p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-15. Seattle-Everett, Wash. Standard Metropolitan Statistical Area. Jun 73, 114p, PC-GPO$1.25, MF$1.45-NTIS
CENSUS-70-HC(4)-16. Washington, D.C.-MD.-Va. Standard Metropolitan Statistical Area. Jun 73, 114p, PC-GPO$1.25, MF$1.45-NTIS

ORNL-TM-4246/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
MAPPING OF POPULATION DENSITY.
C. M. Haaland, and M. T. Heath.
Contract W-7405-eng-26

Descriptors: (*Usa, *Human populations), Geography, Spatial distribution.

For abstract, see NSA 28 06, number 15154.

ORNL-UR-101/GA PC$5.00/MF$1.45
Oak Ridge National Lab., Tenn.
MIGRATION AND FERTILITY: A STUDY OF THE SOCIAL FACTORS INVOLVED.
P. N. Ritchey.
Contract W-7405-eng-26

Descriptors: Fertility, Human populations, Regional analysis.

For abstract, see NSA 28 04, number 10597.

ORNL-UR-102/GA PC$3.50/MF$1.45
Oak Ridge National Lab., Tenn.
CHANGES IN POPULATION AND EMPLOYMENT AS PROCESSES IN REGIONAL DEVELOPMENT.
C. H. Patrick, and P. N. Ritchey.
Contract W-7405-eng-26

Descriptors: Human populations, Occupations, Regional analysis.

For abstract, see NSA 28 04, number 10598.

ORNL-UR-103/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.
CORRELATES OF CHILDLESSNESS AND EXPECTATIONS TO REMAIN CHILDLESS: U.S. 1967.
P. N. Ritchey, and C. S. Stokes.
Contract W-7405-eng-26

Descriptors: Fertility, Human populations.

For abstract, see NSA 28 04, number 10599.

ORNL-UR-104/GA PC$3.50/MF$1.45
Oak Ridge National Lab., Tenn.
MEASURING PATTERNS OF URBAN GROWTH.
C. M. Taeuber.
Contract W-7405-eng-26

Descriptors: Growth, Population dynamics, Urban populations.

For abstract, see NSA 28 04, number 10600.

ORNL-UR-105/GA PC$3.50/MF$1.45
Oak Ridge National Lab., Tenn.
DECENTRALIZATION OF MANUFACTURING EMPLOYMENT.
C. H. Patrick.
Contract W-7405-eng-26

Descriptors: Human populations, Occupations, Regional analysis.

For abstract, see NSA 28 04, number 10601.

ORNL-UR-108/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.
URBAN CLASSIFICATION SCHEME: THE DEVELOPMENT OF A SIMPLE URBAN MODEL.
M. M. Williams.
Contract W-7405-eng-26

Descriptors: Population dynamics, Statistics, Urban populations.

For abstract, see NSA 28 04, number 10602.

ORNL-UR-109/GA PC$3.75/MF$1.45
Oak Ridge National Lab., Tenn.
SELECTED FACTORS INFLUENCING CITY GROWTH, 1960--1970.
R. B. Sturgis.
Contract W-7405-eng-26

Descriptors: (*Urban populations, *Population dynamics).

For abstract, see NSA 28 05, number 12572.

ORNL-UR-110/GA PC$4.50/MF$1.45
Oak Ridge National Lab., Tenn.
POVERTY AND MIGRATION FROM RURAL TO METROPOLITAN AREAS.
P. N. Ritchey.

Descriptors: (*Rural populations, *Population dynamics), (*Urban populations, Population dynamics).

For abstract, see NSA 28 04, number 10603.

ORNL-UR-112/GA PC$9.25/MF$1.45
Oak Ridge National Lab., Tenn.
EFFECTS OF CROWDING AND HIGH POPULATION DENSITY: AN ANNOTATED BIBLIOGRAPHY WITH PERMUTED TITLE AND SIMPLE AUTHOR, TITLE, KEY WORD, AND TAXONOMIC INDICES.
M. M. Williams, Z. Combs, and G. Edmonds.
Contract W-7405-eng-26

Descriptors: (*Populations, *Distribution), (*Regional analysis, *Bibliographies), Animals, Biological effects, Environment, Human populations, Mammals, Man.

For abstract, see NSA 28 04, number 10604.

PB-223 875/6GA PC$5.75/MF$1.45
New York State Dept. of Education, Albany. Div. of Special Occupational Services.
THE INVISIBLE PRISON. AN ANALYSIS OF BARRIERS TO INMATE TRAINING AND POST-RELEASE EMPLOYMENT IN NEW YORK AND MAINE.
31 Mar 72, 233p*
Prepared in cooperation with RCA Institutes, New York.

Descriptors: (*Criminology, *Rehabilitation), Counseling, Qualifications, Employment, Education, New York, Maine, Social welfare, Manpower utilization, Analyzing, Public law.
Identifiers: *Prison inmates, Post release performance, Parole.

The objective of the study was to identify and analyze practices and procedures, rules and regulations, and public laws which hinder or prevent inmate training and post-release employment and to recommend necessary modifications. Members of the project staff reviewed the literature on the subject and sought information and advice from consultants in New York, Maine, and other states. Visits were made to ten correctional institutions in New York and Maine, and interviews were held with parole officers, corrections personnel, inmates, and ex-inmates. Research of legislation was conducted in both states, and surveys were made of policies and practices of state licensing and certification boards and major private employers. Sixty-six recommendations were made in the areas of institutional operation, training programs, employment, parole and aftercare. Many of the recommendations are directed specifically at the states of New York and Maine, but other states with equivalent restrictions on the employment and treatment of offenders will find them applicable.

PB-223 901/0GA PC$3.50/MF$1.45
Pennsylvania Governor's Justice Commission, Harrisburg.
DIVERSION OF THE PUBLIC INEBRIATE FROM THE CRIMINAL JUSTICE SYSTEM,
Charles W. Weis. Apr 73, 64p* LEAA-TA-72-03-0001
Grant LEAA-TA-72-0001

Descriptors: (*Alcoholism, *Law enforcement), Social welfare, Criminology, Detoxification, Project planning, Rehabilitation, Financing, Personnel.
Identifiers: *Residential treatment centers.

Approximately one-third to one-half of all arrests are for public drunkenness, resulting in a heavy burden on all phases of the criminal justice system. This report presents practical guidelines for diverting the public inebriate from the criminal justice system into community institutions such as health or social service agencies. The intent of the report is to suggest diversionary programs which will not only relieve the burden on law enforcement, but will also enhance the legal, physical and social well being of this 'victimless crime offender.' The guidelines provide step by step procedures for implementing the diversionary programs, including general staffing and budget requirements, possible funding sources, and evaluation requirements.

PB-223 977/0GA PC$3.50/MF$1.45
California Assembly General Research Committee, Sacramento. Assembly Science and Technology Advisory Council.
CALIFORNIA POPULATION PROBLEMS AND STATE POLICY. A REPORT TO THE ASSEMBLY GENERAL RESEARCH COMMITTEE, CALIFORNIA LEGISLATURE.
Final rept. Apr 70-Dec 71.
Dec 71, 51p 289
Grant NSF-GT-6

Descriptors: (*Population growth, *California), (*Demography, *Regional planning), Surveys, Statistical data, Urbanization, Recommendations, Policies, Problem solving, Population migrations, Birth control, Research, Project planning.
Identifiers: Environmental impact statements.

During the 1970 Session of the California Legislature, the Speaker of the Assembly appointed a select committee on environmental quality to conduct an overview of the state's environmental problems and to recommend appropriate legislative action. Among the recommendations was one to study and formulate a state population policy for future legislative action. The report presents the results of such a study and summarizes the conclusions and recommendations on issues relating to California's population growth and distribution.

PB-223 984/6GA PC$4.50/MF$1.45
National Park Service, Denver, Colo. Historic Preservation Team.
FEASIBILITY STUDY ON HISTORICAL RECONSTRUCTION WHITMAN MISSION NATIONAL HISTORIC SITE, WASHINGTON,
Erwin N. Thompson. May 73, 129p FNP-PHH-73-139

Descriptors: (*National parks, *History), Sites, Architecture, Religious buildings, Construction, Feasibility, Archaeology, Washington(State).
Identifiers: Whitman Mission National Historic Site, Walla Walla(Washington).

The missionaries wrote their own chapter in the social history of the West. How they lived at Whitman Mission is evidenced by the mission structures. This study is intended to provide basic data needed for a determination of the feasibility of reconstructing the mission buildings and other significant site features at Waiilatpu, site of the mission station. The study deals with analysis and synthesis of historical and archeological evidence pertaining to the mission structures and directs itself particularly to the problem of reconstruction of former historic structures.

PB-224 081/0GA PC$15.50/MF$1.45
National Park Service, Denver, Colo. Historic Preservation Team.
HISTORIC RESOURCE STUDY - ALLEGHENY PORTAGE RAILROAD NATIONAL HISTORIC SITE, PENNSYLVANIA,
Anna Coxe Toogood. May 73, 266p FNP-PHH-73-138

Descriptors: (*National parks, *History), Railroads, Transportation, Sites, Pennsylvania, Reviews.
Identifiers: *Allegheny Portage Railroad National Historical Site, Cambria County(Pennsylvania).

The study deals with the planning, surveys, construction, operation, maintenance, and ultimate replacement of the whole length of the Allegheny Portage Railroad (1834-1855). The importance of this railroad as a link in the development of transportation in America, notably as a major route in the migration west to the Mississippi Valley, has been recognized. The author has presented the history of the major themes of the railroad, the general location of principal structures, and the extent of settlement along the road.

PB-224 086/9GA PC$5.25/MF$1.45
National Park Service, Denver, Colo. Historic Preservation Team.

HISTORIC STRUCTURE REPORT. LINCOLN HOME NATIONAL HISTORIC SITE,
Edwin C. Bearss. Jul 73, 176p FNP-PHH-73-141

Descriptors: (*National parks, *History), Sites, Residential buildings, Architecture, Furniture, Reviews, Illinois.
Identifiers: *Lincoln Home National Historical Site, Springfield(Illinois).

The study brings together under one cover a Wide range of information relating to the history of the Lincoln Home. Included is Administrative, historical and construction data, as well as an in depth presentation of the operation and maintenance of the property until comparatively recent data. The period covered extends from 1824 to 1971. Persons most closely associated with the property have been identified and some reminiscences presented which contribute to the interest of the narrative. The report includes much information concerning the furnishings. The report is well documented, includes a bibliography, and numerous illustrations.

PB-224 401/8GA Not Available NTIS
National Academy of Sciences, Washington, D.C.
COMMUNICATION FOR CHANGE WITH THE RURAL DISADVANTAGED. A WORKSHOP.
Feb 72, 121p
International Standard Book No. 0-309-01942-7. Library of Congress Card No. 72-186371.
Paper copy available from National Academy of Sciences, Printing and Publishing Office 2101 Constitution Ave., Washington, D.C. 20418 $3.75.

Descriptors: (*Social change, *Rural areas), (*Communicating, *Reference groups), Socioeconomic status, Objectives, Problem solving, Methodology, Organizations, Sociopsychological surveys, Constraints, Social communication.
Identifiers: Disadvantaged groups, Workshops.

At a time when many programs designed to meet the needs of the rural disadvantaged are falling short of the mark, the report examines obstacles to effective communication between the rural disadvantaged, those who are working with them, and the public at large. It presents scholarly aspects of analysis and research on one hand, and impact of the responses of the disadvantaged on the other.

PB-224 464/8GA PC$3.00/MF$1.45
Alabama Development Office, Montgomery.
DEMOGRAPHIC ANALYSIS IN ALABAMA. AN ANNOTATED BIBLIOGRAPHY.
Final rept.,
Gilford C. Gilder. Sep 73, 15p ALA-ADO-X996-1020-04

Descriptors: (*Demographic surveys, *Alabama), (*Demography, *Bibliographies), Regions, Populations, Vital statistics, Population migrations, Statistical distributions, Classifications, Forecasting, Information systems, Municipalities.
Identifiers: Annotated bibliographies.

The major portion of this publication is an annotated bibliography of state and regional demographic studies of Alabama plus a list of municipal demographic studies. There are a total of 41 annotated entries. Introduction delineates purpose, format and sources of entries. Concluding section presents brief discussion of statewide demographic studies.

6. BIOLOGICAL AND MEDICAL SCIENCES

6A. Biochemistry

AD-767 784/2GA PC$3.00/MF$1.45
Nagasaki Univ (Japan) Atomic Disease Inst
STUDIES ON MAMMALIAN AND HUMAN PYRUVATE AND ALPHA-KETOGLUTARATE DEHYDROGENATION COMPLEXES.
Annual rept. no. 12, 15 Mar 72-14 Mar 73,
Masahiko Koike. 13 Aug 73, 26p ARDG(FE)-J-232-12
Grant DA-CRD-afe-s92-544-68-g145
See also report dated Mar 71, AD-726 468.

Descriptors: (*Oxidoreductases, Mammals), (*Pyruvates, Oxidoreductases), (*Glutaric acids, Oxidoreductases), Transferases, Humans, Dehydrogenation, Enzymes, Molecular structure, Chemical analysis, Electrophoresis, Chromatographic analysis, Biochemistry, Escherichia coli, Japan.

Enzyme systems that catalyze a coenzyme A- and nicotinamide adenine dinucleotide-linked oxidative decarboxylation of pyruvate and 2-oxoglutarate in mammals have been isolated from the Keilin-Hartree preparation of the pig heart muscle as soluble multienzyme complexes with molecular weights in the millions. These multienzyme complexes have distinctive structures and catalyze a coordinated sequence of reaction. The aims of this research are to resolve these complexes into their essential enzymes, to characterize the latter and to determine the composition, macromolecular structure and regulatory mechanism of these two multienzyme complexes. (Modified author abstract)

AD-767 859/2GA Not available NTIS
British Columbia Univ Vancouver Faculty of Pharmaceutical Sciences
ACETYLCHOLINESTERASE: SPECIFIC INACTIVATION OF ALLOSTERIC EFFECTS BY A WATER-SOLUBLE CARBODIIMIDE,
Basil D. Roufogalis, and Virginia M. Wickson. 11 Dec 72, 3p
Availability: Pub. in the Jnl. of Biological Chemistry, v248 n6 p2254-2256, 25 Mar 73.

Descriptors: (*Acetylcholinesterase, Excitation), Inhibition, Enzymes, Alkylation, Amino acids.
Identifiers: *Allosteric sites, *Carbodiimides.

The aim of the study is to investigate the effects of chemical modification of acetylcholinesterase with specific amino acid reagents and potential affinity alkylating agents. In this way the authors hope to obtain further evidence for the presence of allosteric sites on the enzyme, and to characterize their function and chemical nature. Reported is the use of a water-soluble carbodiimide to specifically inhibit allosteric activation of acetylcholinesternase. This has been achieved without dimishing the basal velocity of hydrolysis of acetylcholine, the enzyme's physiological substrate.

AD-767 896/4GA PC$4.50/MF$1.45
School of Aerospace Medicine Brooks AFB Tex
CLINICAL LABORATORY SYSTEM DEVELOPED FOR WILFORD HALL USAF MEDICAL CENTER, 1972,
Ralph R. Grams. Sep 73, 147p Rept no. SAM-TR-73-34

Descriptors: (*Medical laboratories, Systems engineering), Flow charting, Operation.
Identifiers: *Chemical laboratories, *Clinical chemistry, *Autoanalyzers, *Automated clinical laboratory systems.

The broad subject of the clinical laboratory is more precisely defined within the Operational System section (Chemistry Laboratory), which deals extensively with the use of the AutoAnalyzer equipment. A problem statement introduces the Operational System section; then the actual chemistry operation used at Wilford Hall in 1972 is presented. This material is illustrated through flowcharts and descriptions, with appropriate exhibits where necessary. The next section, Relevant Systems, documents ideas pertaining to the original problem statement that have been used by others and proven successful. The last section, Proposed System, deals with solving the original problem statement. This is divided into two phases: (1) a major modification in the manual operation, using Xerox and microfilm techniques; and (2) the necessary automation which can be implemented to increase the efficiency and operational capabilities of the manual system. Both phases of the proposed system design use flowcharts and exhibits to indicate the implied design criteria. All operational, relevant, and proposed systems are analyzed so that evaluation and update are part of the original proposal. Recommendations of both policy and procedure to be used during system implementation are also provided. (Modified author abstract)

AERE-R-7321/GA PC$3.00/MF$1.45
Atomic Energy Research Establishment, Harwell (England).
DETERMINATION OF LEAD IN HUMAN RIB BONE.
H. S. Hislop, A. Parker, G. S. Spicer, and M. S. W. Webb. Mar 73, 14p
U.S. Sales Only.

Descriptors: (*Lead, *Activation analysis), (*Skeleton, Activation analysis), Absorption spectroscopy, Photon beams, Quantitative chemical analysis, Spectrophotometry.

For abstract, see NSA 28 04, number 07836.

BNL-17850/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
FREE RADICALS IN THE HUMAN NERVOUS SYSTEM.
D. C. Borg. 1973, 15p CONF-730441-1

Descriptors: (*Nervous system, *Radicals), Chemical properties, Man, Nervous system diseases.

For abstract, see NSA 28 05, number 12499.

COO-1783-12/GA PC$3.50/MF$1.45
Case-Western Reserve Univ., Cleveland, Ohio. Dept. Of Biochemistry.
PHOSPHOENOLPYRUVATE CARBOXYTRANSPHOSPHORYLASE. VII. AN INVESTIGATION OF THE REACTION MECHANISM WITH EXP 18 O. ENOLPYRUVATE AND CO SUB 2 FIXATION.
W. E. O'Brien, R. Jr. Singleton, and H. G. Wood. 1973, 28p
Contract AT(11-1)-1783

Descriptors: (*Phosphotransferases, *Reaction kinetics), Carbon dioxide, Chemical reactions, Keto acids, Oxygen 18, Tracer techniques.

For abstract, see NSA 28 05, number 12541.

COO-1801-29/GA PC$3.00/MF$1.45
Kansas Univ., Kansas City. Medical Center.
PROTEIN SYNTHESIS IN DELAYED IMPLANTING MOUSE OVA. PROGRESS REPORT, MAY 1, 1972--APRIL 31, 1973.
H. M. Weitlauf. 1973, 6p
Contract AT(11-1)-1801

Descriptors: (*Proteins, *Biosynthesis), (*Ova, Proteins), Actinomycin, Biological effects, Estrogens, Mice, Progesterone.

For abstract, see NSA 28 05, number 12542.

COO-3280-2/GA PC$3.00/MF$1.45
Johns Hopkins Univ., Baltimore, MD. Dept. Of Radiological Sciences.
BASIC MECHANISM IN CARCINOGENESIS. PROGRESS REPORT, MAY 1972--MAY 1973.
P. O. P. Ts'o. 1973, 12p
Contract AT(11-1)-3280

Descriptors: (*Carcinogenesis, *Biochemical reaction kinetics), Dna, Mammals, Strand breaks.

For abstract, see NSA 28 04, number 10560.

COO-3363-2/GA PC$3.00/MF$1.45
Mount Sinai School of Medicine, New York.
STUDIES OF LYMPHOCYTE GROWTH AND DIFFERENTIATION. PROGRESS REPORT, MAY 1, 1972--APRIL 15, 1973.
A. D. Rubin. 1973, 17p
Contract AT(11-1)-3363

Descriptors: (*Lymphocytes, *Cell differentiation), Cytology, Growth.

For abstract, see NSA 28 04, number 10561.

N73-29042/1GA PC$3.00/MF$1.45
Techtran Corp., Silver Spring, Md.
THE MOLECULAR ORGANIZATION OF THE ACTIVE CENTER OF MICROSOMAL CYTOCHROME P-450.
L. M. Raykhman, B. Annayev, V. S. Belova, and M. R. Borukayeva. Aug 73, 18p NASA-TT-F-15042
Contract NASW-2485
Tran-Transl. Into English from MOL. Biol. (Moscow), V. 7, No. 3, 1973 p 399-409.

Descriptors: *Cytochromes, *Molecular structure, Electron paramagnetic resonance, Enzymes, Hormones, Oxidation.

For abstract, see STAR 1120

ORNL-TIRC-73-4/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TRACE ELEMENT PROFILE ON HUMAN BLOOD: A BIBLIOGRAPHY,
Helga B. Gerstner. Mar 73, 17p* TIP-1000
Contract W7405-eng-26

Descriptors: (*Blood, *Trace elements), (*Bibliographies, Trace elements), (*Toxicity, Trace elements), Humans, Pathology, Biochemistry.
Identifiers: Clinical chemistry.

The bibliography of 117 selected references on trace elements in human blood, under both normal and pathological conditions, was compiled by the Toxicology Information Response Center in answer to a specific request. Coverage of the abstract literature spans the years 1968 to 1973. The citations are arranged chronologically by year and alphabetically by first author within each year.

PB-223 892/1GA PC$3.00/MF$1.45
Medical Coll. of Wisconsin, Milwaukee. Dept. of Environmental Medicine.
PREDICTING THE CARBOXYHEMOGLOBIN LEVELS RESULTING FROM CARBON MONOXIDE EXPOSURES.
Final rept.,
Jack E. Peterson, and Richard D. Stewart. Jun 73, 49p* MCOW-ENVM-CO-73-1 CRC-APRAC-CAPM-3-68-4

Descriptors: (*Carbon monoxide, Hemoglobins), Exposure, Sex, Exercise, Inhalation, Lung, Dosage, Numerical analysis, Empirical equations, Oxygen, Predictions.
Identifiers: *Carbonylhemoglobin.

The report consists of data from a series of human exposures to carbon monoxide which were analyzed to determine the fit to the theoretical Coburn, Forster, Kane (CFK) equation as a function of experiment duration and CO concentration, exercise level, and sex. The equation was found to predict carboxyhemoglobin (COHb) levels for both men and women at exercise rates ranging from sedentary to 300 kp-m/min when they were exposed to steady CO concentrations of 50, 100, and 200 ppm for 0.33 to 5.25 hours. In addition, the equation accurately summed the results of a discontinuous exposure to CO. Methods for determining values of each of the variables in the CFK equation were collected and a rational, efficient procedure for solving the equation was then used to prepare a graph relating COHb saturation to exposure duration and concentration, and also to describe the effect of several variables on the rate of CO uptake and equilibrium COHb levels. Portions of this document are not fully legible.

UCB-34-P-190-X-1/GA PC$3.00/MF$1.45
California Univ., Berkeley. Dept. Of Biochemistry.
PROGRESS REPORT FOR THE PERIOD 1 SEPTEMBER 1972--31 AUGUST 1973.
5p
Contract AT(04-3)-34

Descriptors: (*Dna, Strand breaks), (*Strand breaks, *Biological repair), Chemical radiation effects, Dna-ase, Photon beams, Radioinduction, Ultraviolet radiation, X radiation.

For abstract, see NSA 28 06, number 13002.

UCLA-34-P-102-35/GA PC$4.75/MF$1.45
California Univ., Los Angeles.
OCCURRENCE AND CHARACTERISTICS OF A RAPID EXCHANGE OF PHOSPHATE OXYGENS CATALYZED BY SARCOPLASMIC RETICULUM VESICLES.
T. Kanazawa, and P. D. Boyer. 1972, 54p
Contract AT(04-3)-34

Descriptors: (*Animal cells, *Respiration), Atpase, Biochemical reaction kinetics, Calcium, Catalysts, Endoplasmic reticulum, Magnesium, Metabolism, Muscles, Oxygen, Phosphates, Rabbits, Water.

For abstract, see NSA 28 06, number 15168.

UCSD-34-P-133-X-7/GA PC$3.00/MF$1.45
California Univ., San Diego.
GENETIC CONTROL OF ENZYME FORMATION. PROGRESS REPORT.
6p
Contract AT(04-5)-34 O.A. 133

Descriptors: (*Transferases, *Biosynthesis), (*Isomerases, Biosynthesis), (*Tryptophan, *Metabolism), Antigen-antibody reactions, Bacteria, Genes, Genetic variability, Proteins, Tryptophan.

For abstract, see NSA 28 05, number 12600.

UR-3490-208/GA PC$4.00/MF$1.45
Rochester Univ., N. Y. (Usa). Clinical Radiation Research Center.
DEVELOPMENT OF THE VASCULAR SYSTEM IN THE HAMSTER MALIGNANT NEURILEMMOMA.
H. A. Eddy, and G. W. Casarett. 1972, 40p

Descriptors: (*Blood vessels, *Growth), (*Neoplasms, Blood vessels), Hamsters, Transplants.

For abstract, see NSA 28 05, number 12602.

6B. Bioengineering

COO-3206-14/GA PC$4.00/MF$1.45
Hittman Associates, Inc., Columbia, MD.
DEVELOPMENT OF AN INDWELLING INTRACRANIAL PRESSURE SENSOR. PHASE I.
W. C. Lyon. Jun 72, 41p
Contract AT(11-1)-3206

Descriptors: (*Pressure gages, *Design), (*Cerebrospinal fluid, *Pressure measurement), Americium, Operation, Radiometric gages, Skull.

For abstract, see NSA 28 04, number 08279.

ORNL-TIRC-73-VB-5/GA PC$5.00/MF$1.45
Toxicology Information Response Center, Oak Ridge, Tenn.
METABOLISM OF FOREIGN COMPOUNDS: AN ANNOTATED BIBLIOGRAPHY.
A. J. Verbiscar. Jun 73, 28p

Descriptors: (*Metabolism, *Bibliographies), Additives, Drugs, Mammals, Pesticides, Reagents, Solvents, Steroids.

For abstract, see NSA 28 04, number 10595.

6C. Biology

AD-767 753/7GA PC$2.75/MF$1.45
Kyushu Univ Fukuoka (Japan) Dept of Parasitology
TAXONOMIC AND ECOLOGICAL STUDIES ON THE LUNG FLUKE, 'PARAGONIMUS' IN CENTRAL AND SOUTH AMERICA.
Annual rept. no. 10, 1 Jun 72-30 Jun 73,
Ichiro Miyazaki. 18 Jul 73, 8p ARDG(FE)-349-10
Contract DAJB17-72-C-0191

Descriptors: (*Platyhelminths, Classification), (*Ecology, Platyhelminths), Central America, South America, Crustacea, Mammals, Japan.
Identifiers: Lung flukes, Paragonimus amazonicus, Paragonimus peruvianus, Host-parasite relations.

In Tingo Maria, Peru, 25 crabs, Pseudothelphusa chilensis were examined for Paragonimus metacercariae with negative results. Five lung flukes were obtained from two kinds of mammals; two worms from one of two four-eyed opossums, Philander opossum, and three from a water opossum, Chironectes minimus. These flukes belonged to the same species characterized by their extremely elongated body, and were named Paragonimus amazonicus sp. n. by Miyazaki, Grados and Uyema in 1973. After that, 19 adult lung flukes were obtained from some mammals at Tingo Maria; three of them from a water opossum were easily identified as P. amazonicus and the remainder obtained from the puma, tigrillo and huron major appeared to be new to science. In Panama, two species of crabs, Ptychophallus montanus cocleensis and P. exilipes were examined at three localities, and it was revealed that 29 of 10% of 301 crabs harbored 44 Paragonimus metacercariae in all. These larvae were divided into two species, five of them being identified as Paragonimus peruvianus and 39 being an unknown species. Twenty-two larvae of the latter species were experimentally fed to two cats, but no lung flukes were found from them. (Author)

AD-768 260/2GA Reprint
Armed Forces Inst of Pathology Washington D C
INTERCHROMOSOMAL FIBRES: AUTHENTIC OR ARTEFACTUAL,
Harvey M. Golomb, and Gunter F. Bahr. 1973, 2p
Availability: Pub. in The Lancet, p260-261, 3 Feb 73.

Descriptors: (*Chromosomes, Electron microscopy), Morphology(Biology), Fibers.

Ridler and Ohara wrote on the ultrastructure of banded chromosomes and Laca on light microscopy of interchromosomal fibres in heat-Giemsa-stained preparations. Interchromosomal fibres were observed by DuPraw in 1965 and Lampert et al. in 1969 in whole-mount preparations viewed by transmission electron microscopy. Using the scanning electron microscope, Golomb and Bahr confired these observations in 1971. The interchromosomal fibres were evaluated by quan-

titative electron microscopy and found to have the same mass per unit length and diameter as the fibres within the chromatids.

AD-768 288/3GA PC$3.75/MF$1.45
Rosenstiel School of Marine and Atmospheric Science Miami Fla
ASPECTS OF THE ACOUSTIC BIOLOGY OF SHARKS.
Technical rept.,
Arthur A. Myrberg, Jr. Sep 73, 76p Rept no. UM-RSMAS-73061
Contract N00014-67-A-0201-0008

Descriptors: (*Sharks, Reaction(Psychology)), Underwater sound signals, Low frequency, Effectiveness, Deep water, Sources, Florida, Bahama Islands.
Identifiers: Sonic attractants, Carcharhinus falciformis.

Reprints of five published studies are included on the acoustic biology of selected species of sharks found in the waters off Florida and the Bahamas. Interest was directed primarily at determining: (1) what types of underwater sounds (instrumental, as well as biological) were effective attractants for sharks, (2) those parameters of a sound which were apparently used by these animals for purposes of rapid, oriented movement to a sound source, and (3) what might be the biological significance attached to excellent hearing ability and rapid movement to a given sound-producer. (Author)

AD-768 289/1GA Reprint
Rosenstiel School of Marine and Atmospheric Science Miami Fla
INVESTIGATIONS ON THE BEHAVIOR AND SONIC ACTIVITY OF FISHES.
Technical rept.,
Arthur A. Myrberg, Jr. Sep 73, 178p Rept no. UM-RSMAS-73062
Contract N00014-67-A-0210-0004
Availability: Pub. in various journals.

Descriptors: (*Fishes, *Marine biological noise), Reproduction(Physiology), Behavior, Underwater sound signals, Reaction(Psychology), Televiaion communication systems, Underwater communication systems, Bahama Islands.
Identifiers: Eupomacentrus partitus.

The document contains reprints of published studies on the behavioral activities of selected marine teleosts, primarily damselfishes and jawfishes. All studies were carried out either entirely or in part at the University of Miami's underwater video-acoustic installation, housed at the Lerner Marine Laboratory, North Bimini, Bahamas. (Modified author abstract)

BNWL-1750(Pt.2)/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
PACIFIC NORTHWEST LABORATORY ANNUAL REPORT FOR 1972 TO THE USAEC DIVISION OF BIOMEDICAL AND ENVIRONMENTAL RESEARCH. VOLUME I. LIFE SCIENCES. PART 2. ECOLOGICAL SCIENCES.
B. E. Vaughan. Mar 73, 136p
Contract AT(45-1)-1830

Descriptors: (*Biology, *Research programs), (*Ecosystems, Research programs), Environment, Hapo, Leading abstract.

For abstract, see NSA 28 05, number 10982.

COM-73-11515/6GA PC$3.25/MF$1.45
Washington State Dept. of Fisheries, Olympia. Management and Research Div.
OBSERVATIONS ON SOME PUGET SOUND SPAWNING BEACHES OF THE SURF SMELT (HYPOMESUS PRETIOSUS, GIRARD).
Supplemental progress rept.,
Dan Penttila. May 73, 24p NOAA-73082803
Contract NMFS-4-3-208-50, Grant NMFS-1-81-R

Descriptors: (*Fishes, Puget Sound), Washington(State), Beaches, Shores, Surf, Temperature, Life cycles, Mortality, Biological surveys, Ecology.
Identifiers: Hypomesus pretiosus, *Smelts, Spawning.

The purpose of this study was to determine the current status of known surf smelt-spawning beaches in Puget Sound. Objectives included collecting data on time of spawning, intensity of egg deposition, egg development, mortality, and dispersion. Physical environmental factors, such as spawning substrate composition, temperature regimes, and preferred range of tidal elevation during spawning, were also investigated. The spawning beach locations and timing records obtained from earlier literature, chiefly Schaefer (1936) and Yap-Chiongco (1941) were used as initial guides to begin the field surveys. Information resulting from this study will be useful to decision makers attempting to resolve the various conflicts and problems arriving with respect to Puget Sound shoreline management, and relationships between shoreline landowners and sport and commercial fisherman.

COM-73-11516/4GA PC$4.75/MF$1.45
Oregon Fish Commission, Portland.
CONTROLLED REARING OF DUNGENESS CRAB LARVAE AND THE INFLUENCE OF ENVIRONMENTAL CONDITIONS ON THEIR SURVIVAL.
Completion rept. Nov 65-Jun 71,
Thomas F. Gaumer. May 73, 55p NOAA-73082801
Grant NMFS-1-5-R, NMFS-1-66-R

Descriptors: (*Crabs, Ecology), (*Aquaculture, Crabs), Light(Visible radiation), Aeration, Water flow, Tests, Experimental data, Larvae, Shrimps, Environmental tests, Growth, Survival, Diets, Behavior.
Identifiers: Cancer magister, Artemia salina.

The research describes the effects of various environmental factors on crab larvae survival and behavior. Tests were conducted on cultured zoeae and megalopae and on wild megalopae. Studies showed that the highest survival (93.3%) of crab larvae through the fifth zoeal stage occured when they were reared in a closed environment. Newly hatched San Francisco brine shrimp, when fed at concentrations of five per ml of rearing water, were the most satisfactory food source. Optimum larvae densities appeared to be five zoeae per 200 ml of rearing water. All cultured crab megalopae were significantly smaller than those larve collected from Yaquina Bay. Diet concentration appeared to affect size. (Modified author abstract)

COM-73-11521/4GA Reprint
National Marine Fisheries Service, Beaufort, N. C. Atlantic Estuarine Fisheries Center.
A LARVAL TARPON, MEGALOPS ATLANTICUS, FROM PENSACOLA, FLORIDA,
Marlin E. Tagatz. 1973, 3p NOAA-73071717
Pub. in Copeia (Ichthyological Notes) v1 p140-141, 5 Mar. 73.

Descriptors: (*Marine fishes, *Larvae), (*Mexico Gulf, Maine fishes), Distribution, Reproduction(Biology).
Identifiers: Megalops atlanticus, Spawning, *Tarpon.

A larval tarpon, Megalops atlanticus, an early Stage II as designated by Wade (1962), was collected in the upper reaches of East Bay, about 45 km from the Pensacola Inlet, Florida on 20 October 1970. It represents the second and most northern record of a larval tarpon from the Gulf of Mexico, and suggests late spawning in the Gulf. The specimen from East Bay was collected unusually late in the year. This may indicate that spawning in the northern Gulf is later than in southern regions. Except for a larva taken 12 November 1921 off French Guiana, all Stage I and II larvae have been captured from 17 May to 1 October. The larva was collected in a plankton tow near the entrance of East Bay River in water 1.5 m deep.

COM-73-11531/3GA PC$3.00/MF$1.45
North Dakota Univ., Grand Forks.
THE BIOLOGY AND ECOLOGY OF RIVER CARPSUCKER, 'CARPIODES CARPIO' (RAFINESQUE), IN THE LITTLE MISSOURI ARM OF LAKE SAKAKAWEA, NORTH DAKOTA.
Master's thesis,
Darrel John Trzpuc. Dec 72, 50p NOAA-73073007

Descriptors: (*Carp, *Ecology), (*North Dakota, Carp), Populations, Distribution, Fishes, Rivers, Turbidity, Temperature, pH, Growth, Reproduction(Biology), Lake Sakakawea.
Identifiers: Carpiodes carpio.

The life history, growth, and ecologic distribution of river carpsucker, Carpiodes carpio (Rafinesque), were studied in the Little Missouri Arm of Lake Sakakawea, North Dakota, between May 15 and August 14, 1970. In the course of the study 745 river carpsuckers were captured. The distribution of this species in the Little Missouri Arm was influenced by turbidity and water temperature. Dissolved oxygen content and hydrogen ion concentration did not affect their distribution. The condition factor of 2.94 indicated that carpsucker growth in the arm was good. Limited observations of reproduction and spawning habits were made, and the evidence indicated that carpsuckers spawn in the Little Missouri River upstream from the area studied. (Author)

COM-73-11536/2GA Reprint
Gulf Coast Research Lab., Ocean Springs, Miss. Microbiology Section.
CHITINOCLASTIC BACTERIA ASSOCIATED WITH SHELL DISEASE IN 'PENAEUS' SHRIMP AND THE BLUE CRAB ('CALLINECTES SAPIDUS'),
David W. Cook, and Sandra R. Lofton. 14 Nov 72, 7p NOAA-73071715
Grant NOAA-N042-39-71(G), NMFS-2-85-R
Pub. in Jnl. of Wildlife Diseases, v9 p154-159 Apr 73.

Descriptors: (*Shellfish, *Bacterial diseases), Crustacea, Animal diseases, Crabs, Shrimps, Bacteries, Infections, Achromobateraceae, Pseudomonas, Vibrio.
Identifiers: Penaeus setiferus, Callinectes sapidus.

The occurrence of shell disease in three species of penaeid shrimp is reported. Chitinoclastic bacteria isolated from lesions on these shrimp and from lesions on the blue crab were classified as members of the genera Beneckea, Vibrio, and Pseudonomas. One type of Beneckea was present in all cases of shell disease encountered, making this organism suspect of being the causative agent. (Author)

COM-73-11544/6GA Reprint
North Carolina Univ., Chapel Hill.
OBSERVATIONS ON LAGENIDIUM CALLINECTES: ISOLATION AND SPORANGIAL DEVELOPMENT,
Charles E. Bland, and Henry V. Amerson. 8 May 72, 12p NOAA-73061207
Contract NOAA-2-35178
Prepared in cooperation with East Carolina Univ., Greenville, N.C. Dept. of Biology.
Pub. in Mycologia, v65 n2 p310-320 Mar/Apr 73.

Descriptors: (*Crabs, *Fungi), Spores, Parasites, North Carolina, Estuaries.
Identifiers: Lagenidium callinectes, Callinectes sapidus, Sea Grant Program.

A strain of Lagenidium callinectes, isolated from the ova of crabs collected in the Newport Estuary, North Carolina, was brought into agar culture and studied with regard to growth and sporogenesis. The vegetative thallus consists of both intra-matrical hyphae, which may completely fill infected ova, and extramatrical hyphae, which may grow from egg to egg or function in the discharge of cytoplasm prior to spore formation. In sporogenesis, the cytoplasm from a given septum-delineated portion of the thallus migrates through a specialized, nonbranched, extramatrical hypha or discharge tube into a gelatinous vesicle that forms at the hyphal or tube tip. The cytoplasm does not flow as one continous mass, but rather as individual cytoplasmic units that are connected in sequence by a cytoplasmic thread. Cleavage of the cytoplasm occurs inside the vesicle with subsequent spore discharge through a break at the distal end of the vesicle. Once released, the spores swim away immediately. (Author)

COM-73-11545/3GA Reprint
Lamont-Doherty Geological Observatory, Palisades, N.Y.
A RAPID TECHNIQUE FOR RECORDING SIZES OF JUVENILE PELECYPOD MOLLUSCS.
Brief technical note,
Kenneth C. Haines. 12 Dec 72, 2p LDGO-1912
NOAA-73061208
Contract NOAA-1-36119
Pub. in Aquaculture, v1 p433 1973.

Descriptors: (*Pelecypoda, Size determination), Shellfish, Growth, Measurement, Photocopying.
Identifiers: Sea Grant program, Scallops, Argopecten irradians.

A method is reported for facilitating measurement of linear growth in juvenile pelecypod molluscs. An ordinary office photocopier (Model 144, SCM Corp.) is used to make a permanent visual record of the valve size of the bay scallop, Argopecten irradians (Lamarck). The scallops are put in a 3.5 inch (8.9-cm) diameter petri dish without water; six dishes are photocopied on one sheet of letter-size paper. The size of the smallest animals (down to about lmm) can be measured very accurately by examining the photocopy image under a dissecting microscope equipped with a calibrated ocular micrometer.

COM-73-11555/2GA Reprint
Oregon State Univ., Newport. Marine Science Center.
PARASITES AS INDICATORS OF ENGLISH SOLE ('PAROPHRYS VETULUS') NURSERY GROUNDS,
Robert E. Olson, and Ivan Pratt. 1973, 8p NOAA-73082809
Contract NOAA-2-35187
Pub. in Transactions of the American Fisheries Society, v102 n2 p405-411 Apr 73.

Descriptors: (*Fishes, *Parasites), Indicator species, Nematoda, Trematoda, Protozoa, Estuaries, Animal migrations, Coasts, Oregon, Yaquina Bay.
Identifiers: Parophrys vetulus, Sea Grant Program, Sole, Spawning, Echinorhynchus lageniformis, Philometra americana, Gluzea, Zoogonus dextrocirrus, Otodistomum veliporum.

Juvenile English sole (Parophrys vetulus) utilize Yaquina Bay, Oregon as a nursery during at least a portion of their first year of life, but the possibility of the existence of additional nursery grounds offshore has not previously been examined. During 1971, young-of-the-year first appeared in Yaquina Bay in February, were abundant from April to September, and most emigrated to offshore areas in October. Examination of English sole, collected both in the estuary and offshore, revealed certain parasites that appeared to be acquired by the fish only while in the estuary. The acanthocephalan Echinorhynchus lageniformis proved useful in determining the extent of estuarine utilization. The incidence of infection in bay fish before emigration was similar to the incidence in O-group English sole collected offshore after emigration. This result suggests that there was little or no influx of young from other estuarine nursery grounds to the offshore study area, and that on the Oregon coast estuaries are very likely the exclusive nursery grounds for this species.

COM-73-11556/0GA Reprint
National Marine Fisheries Service, Beaufort, N. C. Atlantic Estuarine Fisheries Center.
MIGRATIONS OF TAGGED JUVENILE ATLANTIC MENHADEN,
Richard L. Kroger, and James F. Guthrie. 1973, 7p NOAA-73072306
Pub. in Transactions of the American Fisheries Society, v102 n2 p417-422 Apr 73.

Descriptors: (*Fishes, *Animal migrations), Seasonal variations, Marine fishes, Mortality, Atlantic Ocean.
Identifiers: *Menhaden, Brevoortia tyrannus.

From 1967 to 1971 over 80,000 juvenile Atlantic menhaden, Brevoortia tyrannus, were tagged from Florida to Massachusetts. Returns of the internal ferromagnetic body tags from the commerical menhaden fisheries indicate the juveniles migrate as far south as Florida in the fall and winter and then redistribute northward along the coast by size as age-I fish during the following spring and summer. Larger 1-year-old fish migrate north earlier and in greater numbers than small ones which remain in more southern waters where some are not available to the fisheries for part of the year. Some northward movement of age-I fish from the South Atlantic fishing area to Chesapeake Bay, evidently occurs through midsummer. (Author)

COM-73-11559/4GA Reprint
National Marine Fisheries Service, Beaufort, N. C. Atlantic Estuarine Fisheries Center.
POPULATION DENSITY LIMITATION OF AN ESTUARINE DIATOM BY ILLUMINATION AND NITROGEN SOURCE,
Randolph L. Ferguson. 1972, 2p NOAA-73082910
Pub. in Jnl. of the Elisha Mitchell Scientific Society, v88 n4 1p Winter 72.

Descriptors: (*Diatoms, Biomass), Estuaries, Nitrogen, Light(Visible radiation), Illuminance.
Identifiers: Thalassiosira pseudonana.

Mature phase population density of the estuarine diatom Thalassiosira pseudonana Hasle clone 3H was examined in response to changes in illumination intensity, length of the daily light period and to nitrogen sources and concentrations. Estimates of seasonal light penetration into southeastern United States estuaries indicate that increase in day length from December to June would be of greater direct significance to Thalassiosira than the increase in surface illumination. The latter would affect Thalassiosira indirectly by increasing water temperature. Initial concentrations to 40 micrograms-atoms inorganic nitrogen per liter produced 6.1 x 10 to the 7th power cells/micrograms-atom N under 5375 lux continuous illumination. Urea and n-acetyl glucosamine yielded 42% and 3.5% of the inorganic source production, respectively. (Author)

COM-73-11568/5GA PC$3.00/MF$1.45
California Univ., San Diego, La Jolla. Inst. of Marine Resources.
AN ANNOTATED BIBLIOGRAPHY FOR ECONOMIC EVALUATIONS OF THE AQUACULTURE OF SELECTED CRUSTACEANS AND MOLLUSKS,
Warren E. Johnston, and Don W. Collinsworth. Aug 73, 31p* IMR-74-3, Sea Grant Pub-2 NOAA-73090506
Grant NOAA-043-158-22

Descriptors: (*Mollusca, Aquaculture), (*Crustacea, Aquaculture), (*Aquaculture, Economic Analysis), (*Shellfish, Bibliographies), Lobsters, Crabs, Oysters, Shrimps.
Identifiers: Sea Grant program, Homaurs Americanus, Ponulirus interruptus.

The report represents a selective, working bibliography of sources of economic data and of previous economic analyses relating to the aquaculture of selected crustaceans and mollusks. It is primarily focused on the northern lobster, but it also contains selected references for the spiny lobster, and certain species of crabs, oyster, shrimp and prawns. One hundred and eleven items are included. (Author)

COM-73-11571/9GA Reprint
Oregon State Univ., Corvallis. Dept. of Food Science and Technology.
PARALYTIC SHELLFISH POISON AND MELANIN DISTRIBUTION IN FRACTIONS OF TOXIC BUTTER CLAM ('SAXIDOMUS GIGANTEUS') SIPHON,
R. J. Price, and J. S. Lee. 14 Feb 72, 3p NOAA-73080308
Contract NOAA-2-35187
Also pub. as Oregon State Univ., Corvallis. Agricultural Experiment Station, Technical Paper-3264.
Pub. in Jnl. Fisheries Research Board of Canada, v29 n11 p1657-1658 1972.

Descriptors: (*Clams, *Poisons), (*Melanin, Clams), Shellfish, Chemical analysis, Organic pigments, Toxicity.
Identifiers: Saxidomus giganteus, Sea Grant program, Siphon.

Frozen toxic butter clam (Saxidomus giganteus) siphons were fractionated and each fraction was bioassayed for paralytic shellfish poison (PSP) and chemically analyzed for melanin. Sonication removed over 50% of the melanin from the siphons and this fraction contained nearly 50% of the PSP initially present in the siphons. The data presented further implicate melanin as a PSP binding agent in vivo. (Author)

COM-73-11593/3GA PC$5.00/MF$1.45
Washington State Dept. of Fisheries, Olympia. Management and Research Div.
THE 1971 PUGET SOUND FALL CHINOOK SALMON TAGGING STUDY.
Completion rept. Jul 71-Jun 72,
Grant I. Fiscus, and Earle D. Jewell. Mar 73, 59p NOAA-73090611
Contract NOAA-N208-0054-72(N)

Descriptors: (*Salmon, Marking), Animal migrations, Fisheries, Tables(Data), Puget Sound.
Identifiers: Oncorhynchus tshawytscha, Commercial fishing.

A total of 475 fall chinook (Oncorhynchus tshawytscha) was tagged in marine waters of inner Puget Sound between Discovery Bay and Seattle from July 18 - August 13, 1971. Except for a minor number of tagged fish released on August 13, the tagging studies ended abruptly and prematurely due to cancellation of the purse seine charter, and resulted in identification of only the early portion of the lower Puget Sound fall chinook run. A total of 200 tags (42.1% of the number released) was recovered or sighted and of these, 90 tags (45.0% of the number recovered) came directly from hatchery trapping facilities. The appearance of nine specific stocks in the tagging areas was partially determined. Results of the study prompted two recommendations for changes in the 1972 commercial fishery and adoption of one recommendation. (Author)

COM-73-11598/2GA Reprint
National Marine Fisheries Service, Beaufort, N.C. Atlantic Estuarine Fisheries Center.

AN ANOMALOUS 'SPHYRAENA BARRACUDA',
William F. Hettler, Jr. 1972, 2p NOAA-73071204
Pub. in Chesapeake Science, v12 n4 p326 Dec 72.

Descriptors: (*Marine fishes, Abnormalities), (*Estuaries, Marine fishes), Animal ecology, Mortality, Salinity, Animal migrations, Morphology, Temperature.
Identifiers: Sphyraena barracuda.

A great barracuda, S. barracuda, with a vertical sigmoid vertebral flexure, but no lateral flexure was seined from a shallow estuary near Beaufort on 1 November 1971. Salinity and temperature in the estuary were 17 p.p.t. and 19C. The barracuda was held in a 600 liter tank at 15 p.p.t. salinity and 20C. Small fish, including rough silversides, Membras martinica, were available for forage, but the author never observed the barracuda feeding. Its swimming posture and maneuverability in the tank was unaffected by the deformity. The barracuda died after 2 1/2 months in captivity. The day before death the specimen turned from the usual silver-gray color to dark brownish-grey. A radiograph of the specimen showed no anomalous vertebrae and the reason for the curvature is not known. The fish was not markedly emaciated. It may have died from being held too long at a constant, intermediate salinity and cool temperature. Young barracuda are found inshore in reduced salinity diring summer, but migrate offshore to higher salinities and warmer temperatures as winter approaches.

COM-73-11599/0GA Reprint
National Marine Fisheries Service, Highlands, N.J. Middle Atlantic Coastal Fisheries Center.
BIOLOGY OF YOUNG WINTER FLOUNDER 'PSEUDOPLEURONECTES AMERICANUS' (WALBAUM); METABOLISM UNDER SIMULATED ESTUARINE CONDITIONS,
David W. Frame. 1973, 10p NOAA-73082911
Also pub. as Massachusetts Cooperative Fishery Unit, Contrib-34.
Pub. in Transactions of the American Fisheries Society, v102 n2 p423-430 Apr 73.

Descriptors: (*Fishes, Metabolism), (*Estuaries, Fishes), Salinity, Respiration, Temperature, Dissolved gases, Oxygen.
Identifiers: Pseudopleuronectes americanus.

Metabolism based on laboratory studies of young winter flounder acclimated to estuarine like conditions show that rates of oxygen uptake (ml O2/hr/g), as a function in increasing temperature, do not differ significantly between salinities of 10 and 20 parts per thousand. There is, however, a 40-50% decrease in quantities of oxygen consumed by fish subjected to salinities of 10 and 20 parts per thousand. Metabolic rates do not differ between fish sizes used (within the I+ group; 100-135 mm total length and 140-175 mm total length). Slopes in the equation, log metabolism = log a + b log weight, for temperatures of 24, 20, and 16C (30 parts per thousand salinity) exceed unity. (Author)

COM-73-11600/6GA Reprint
National Marine Fisheries Service, Honolulu, Hawaii. Southwest Fisheries Center.
NEW RECORDS OF 'SARGASSUM HAWAIIENSIS' DOTY AND NEWHOUSE (SARAGASSACEAE, PHAEOPHYTA), A DEEP WATER SPECIES,
Robert E. De Wreede, and Everet C. Jones. 10 Jan 73, 5p NOAA-73082908
Prepared in cooperation with Hawaii Univ., Honolulu.
Pub. in Phycologia, v12 n1/2 p59-62 1973.

Descriptors: (*Aquatic plants, *Hawaii), Phreatophytes, Identifying, Classifications, Deep water.
Identifiers: Sargassum hawaiiensis.

Sargassum hawaiiensis Doty and Newhouse was described in 1966 from a fragmentation specimen dredged from a depth of 50 m off Oahu, Hawaii. Until recently, no further collections have been available for study. In 1968 and 1971 new material was collected from Penguin Banks off Molokai, Hawaii, during shrimp trawling operations by the National Marine Fisheries Service vessel 'Townsend Cromwell'. The specimens were obtained from depths of 183 and 200 meters. A complete description of the species is given, which differentiates it from the three other species of Saragassum recognized from Hawaii. Sargassum hawaiiensis is distinguished by a combination of characteristics, these being: simple spines on some branches, terete vesicle petioles, muticous and spherical vesicles and bifurcate receptacles with narrow sterile bridges. (Author)

COM-73-11601/4GA Reprint
National Marine Fisheries Service, Galveston, Tex. Biological Lab.
COVER AS A FACTOR IN HABITAT SELECTION BY JUVENILE BROWN ('PENAEUS AZTECUS') AND WHITE ('P. SETIFERUS') SHRIMP,
Jeffrey H. Giles, and Gilbert Zamora. 1973, 3p
Contrib-340 NOAA-73082909
Pub. in Transactions of the American Fisheries Society, v102 n1 p144-145 Jan 73.

Descriptors: (*Shrimps, Animal behavior), (*Estuaries, Shrimps), Animal ecology, Feeding habits, Survival, Sea grasses.
Identifiers: Penaeus aztecus, Penaeus setiferus.

The purpose of this study was to observe the distribution of single-species populations of juvenile brown and white shrimp and a mixed population of the two species in aquaria having vegetated and nonvegetated areas. When treated separately, brown and white shrimps showed a significant preference for the grass area both day and night. When the species were mixed, the brown shrimp concentrated in the grass, whereas the white shrimp were more numerous in the bare areas. If this kind of displacement also occurs in nature, it may have a significant effect on the survival of white shrimp.

COM-73-11603/0GA Reprint
Washington State Dept. of Fisheries, Olympia.
GEOGRAPHICAL ORIGIN, TRENDS AND TIMING OF WASHINGTON'S TROLL SALMON (ONCORHYNCHUS) CATCHES, 1960--1969,
Sam Wright, and Richard Brix. 1972, 6p NOAA-73080208
Grant NMFS-55-R-1
Pub. in Pacific Marine Fisheries Commission, Bull 8, p31-36 1972.

Descriptors: (*Salmon, Washington(State)), Fisheries, Management, Statistical data.
Identifiers: Oncorhynchus.

In order to present troll salmon statistics in their most effective format for overall management needs, areas of origin were established in 1970 for ocean catches and past landing statistics were converted to this new area format. Results demonstrated that, during the 1960's, five areas adjacent to Washington's coast ranked as the top producers for chinook and coho, the two species actively sought. A marked decline was noted for numbers of salmon caught off Canada and landed in Washington by U.S. fishermen. (Author)

COM-73-11604/8GA Reprint
Washington State Dept. of Fisheries, Olympia.
SIZE AND AGE CHARACTERISTICS OF CHINOOK SALMON TAKEN BY WASHINGTON'S COMMERCIAL TROLL AND OCEAN SPORT FISHERIES, 1963-1969,
Sam Wright, Richard Kolb, and Richard Brix. 1972, 11p NOAA-73080209
Pub. in Pacific Marine Fisheries Commission, Bull 8 p37-47 1972.

Descriptors: (*Salmon, Washington(State)), Size determination, Age, Management, Fisheries, Tables(Data).
Identifiers: Chinook salmon.

Essential management data concerning biological characteristics of ocean-caught chinook salmon were developed through analysis of a large volume of size-age samples taken over a seven-year period. Magnitude and age composition of commercial and sport catches were presented along with the average length and relative importance of each age group on a monthly basis. Sex ratios by age group and length-weight relationships were also determined. (Author)

COM-73-11605/5GA Reprint
Washington State Dept. of Fisheries, Olympia.
ESTIMATED NUMBERS OF SALMON HOOKED AND RELEASED BY WASHINGTON'S COMMERCIAL TROLL AND OCEAN SPORT FISHERIES IN 1970-1971,
Sam Wright. 1972, 9p NOAA-73080210
Grant NMFS-1-55-R-1
Pub. in Pacific Marine Fisheries Commission, Bull 8, p15-21 1972.

Descriptors: (*Salmon, Statistical data), (*Fisheries, Management), Washington(State), Tables(Data).
Identifiers: Chinook salmon, Coho salmon, Shakers.

Date on numbers of Pacific salmon hooked and released by ocean fisheries because of existing regulatory statues are needed to intelligently manage the resource. Estimates of these quantities of fish were developed through a logbook program for the commercial fishery and by angler interviews in the sport fishery. From these sources, it was determined that 1 1/4 million small chinook and coho were hooked and released off the Washington coast in a two-year period. (Author)

COM-73-11606/3GA PC$3.50/MF$1.45
Alaska Dept. of Fish and Game, Juneau.
FORECAST OF THE 1973 PINK SALMON RUNS, SOUTHEASTERN ALASKA,
Kenneth E. Durley. 1973, 29p ADF/G-Technical data-10 NOAA-73082805

Descriptors: (*Salmon, Forecasting), (*Alaska, Salmon), Animal migrations, Estuaries, Abundance, Tables (Data).

Results of the 1972 pre-emergent fry sampling indicate a return in 1973 of 14.1 million pink salmon to southern Southeastern with a possible range of 12.2 to 16.1 million. A return of approximately 6.0 million is expected to northern Southeastern with a possible range of plus or minus 2.5 million. The nothern forecast based on pre-emergent fry values has been adjusted to take into consideration the possibility of unusually severe marine mortality. Although the magnitude of the total run (20.1 million pinks) to Southeastern Alaska is expected to be close to the 1972 return, the forecast by district and timing segments indicates that a much different distribution and timing pattern will occur. The harvest in southern and northern Southeastern Alaska is expected to be approximately 8.1 million and 2.0 million fish respectively. (Author)

COM-73-11608/9GA PC$10.00/MF$1.45
Alaska Dept. of Fish and Game, Juneau.
REHABILITATION OF SOCKEYE SALMON ON KODIAK AND AFOGNAK ISLANDS, ALASKA.
Completion rept. Jul 70-Jun 72,
Roger F. Blackett. Jun 73, 157p NOAA-73090606

Descriptors: (*Salmon, Statistical data), (*Alaska, Salmon), Surveys, Animal migrations, Survival, Fisheries, Kodiak Island, Afognak Island.
Identifiers: Sockeye salmon.

The report reviews and analyses results of studies on rehabilitation of sockeye salmon on Kodiak and

Afognak Islands, Alaska. Studies were made on the productivity of individual stocks and factors limiting sockeye survival. Biological statistics were developed on magnitude, age, weight, length and sex composition of sockeye in the escapement and smolt out-migrants. Efforts were made to determine the best rehabilitation measures and techniques for restoration of sockeye stocks. Data are presented in tables and graphs.

COM-73-11610/5GA Reprint
Washington State Dept. of Fisheries, Olympia.
MATURITY RATES OF OCEAN-CAUGHT CHINOOK SALMON,
Sam Wright, and John Bernhardt. 1972, 12p NOAA-73080211
Grant NMFS-1-55-R-1
Pub. in Pacific Marine Fisheries Commission, Bull 8, p49-59 1972.

Descriptors: (*Salmon, Statistical data), (*Washington(State), Salmon), Fisheries, Age, Sex, Animal ecology, Management.
Identifiers: Oncorhynchus.

To enhance the existing management data base, over 3,500 chinook caught off the Washington coast during the 1970 and 1971 fishing seasons were sampled for maturity information. Immatures were separated from maturing fish by examination of gonadal volume displacement frequencies and division points were recommended by sex and age group. Three-year old chinook accounted for about half the sample population and, in contrast to younger and older fish, contained substantial numbers of both immature and maturing individuals. (Author)

COM-73-11611/3GA PC$6.25/MF$1.45
Alaska Dept. of Fish and Game, Juneau.
PINK SALMON STUDIES.
Completion rept. Jul 69-Jun 71,
Kenneth E. Durely, Apr 73, 82p NOAA-73090601
Grant NMFS-5-17-R

Descriptors: (*Salmon, Forecasting), (*Alaska, Salmon), Animal migrations, Mortality, Streams, Abundance, Management.
Identifiers: Oncorhynchus gorbuscha.

Southeastern Alaska pink salmon studies using pre-emergent fry values as an Index to abundance for long range forecasting have been in development for the past seven years. The standard technique employed to enable forecasting has been hydraulic sampling of pre-emergent fry in the spawning riffles during the spring months when early freshwater mortality is no longer a major consideration. Spawning riffles in approximately 100 index streams were excavated in a manner which should have given reliable year-to-year comparisons of relative fry abundance. Results of the fry sampling indicate that a linear relationship does exist between pre-emergent fry indices and subsequent adult returns. Success of the forecasts have varied. Errors can be attributed to sampling problems, variable contributions of index streams to total production, variable marine mortalities, and errors in estimating escapements. Since 1968, forecasts have played an important role in management decisions in Southeastern Alaska. (Modified author abstract)

COM-73-11612/1GA PC$4.25/MF$1.45
Auburn Univ., Ala. Dept. of Fisheries and Allied Aquacultures.
FACTORS LIMITING THE SURVIVAL AND GROWTH OF EARLY LIFE HISTORY STAGES OF THE STRIPED BASS, 'MORONE SAXATILIS'.
Completion rept. Apr 70-Mar 73,
E. W. Shell. Jul 73, 43p NOAA-73090602

Descriptors: (*Bass, Survival), (*Aquaculture, *Alabama), Growth, Rivers, Fisheries, Salinity, Animal ecology, Feeding habits, Life cycles, Fisheries, Alabama River, Mobile Bay.
Identifiers: Morone saxatilis, Commercial fishing.

Research was conducted on factors limiting the survival and growth of early life history stages of the striped bass. Specific areas of research were: survival and growth of striped bass fry in ponds, of fry in hatching jars and of fingerlings in ponds. Delayed stocking of fry and increasing the salinity of the water to approximately 150 ppm did not result in increased survival. Viability of fry from different females was a major factor affecting survival. Increasing the salinity to one or two ppt in a recirculating water system resulted in increased survival of fry in hatching jars. Fry fed a combination of brine shrimp and dry feed could be changed to dry feed alone without difficulty. Survival and growth of fingerlings from two river systems was different when grown in ponds. Production of fingerlings was dependent to large extent on whether or not they learned to accept pelleted feed. In the three years, 14,856 marked fish were stocked in the lower Alabama River and Mobile Bay. Fourteen marked fish were recovered and reported during that period. (Author)

COM-73-11614/7GA Reprint
National Marine Fisheries Service, Oxford, Md. Middle Atlantic Coastal Fisheries Center.
A POSSIBLE LIPOMA IN THE WEAKFISH, 'CYNOSCION REGALIS' (BLOCH AND SCHNEIDER),
Haskell S. Tubiash, and Jerry D. Hendricks. 1973, 3p NOAA-73082902
Pub. in Chesapeake Science, v14 n2 p145-146 Jun 73.

Descriptors: (*Fishes, *Neoplasms), Pathology, Connective tissue, Analyzing, Dissection, Animal diseases.
Identifiers: Lipoma, Cynoscion regalis, Weakfish.

The report presents a description of a possible lipoma in the weakfish Cynoscion regalis (Block and Schneider). The growth was thinly encapsulated, firm, and whitish yellow. Histologically, the growth was composed of bundles of normal-appearing skeletal muscle in a predominant mass of adipose tissue. If the mass was neoplastic, it was most probably an early growth stage of a particularly well differentiated lipoma.

COM-73-11620/4GA Reprint
Gulf Coast Research Lab., Ocean Springs, Miss.
PARASITES OF SOME PENAEID SHRIMPS WITH EMPHASIS ON REARED HOSTS,
Robin M. Overstreet. 23 Feb 73, 37p NOAA-73091907
Grant NMFS-2-85-R
Pub. in Aquaculture, v2 p105-140 1973.

Descriptors: (*Parasites, Shrimps), (*Shrimps, Aquaculture), Nematoda, Leeches, Algae, Hydroids, Ciliata, Mexico Gulf, Tables(Data).
Identifiers: Spirocamallanus pereirae, Leptolaimus, Myzobdella lugubris, Schizothrix Calcicola, Obelia bicuspidata.

Information is presented about parasites and commensals of penaeid shrimps, allowing those who rear shrimps and those who are interested in associated organisms of shrimp to have a better knowledge of the organisms that are or may be associated with brown, white, and pink shrimps. It covers common and rare organisms and diseases, primarily in the northern Gulf of Mexico, listing several previously unreported species including an undescribed gregarine, a larval nematode (Spirocamallanus pereirae), a commensal nematode (Leptolaimus sp.), a leech (Myzobdella lugubris), a blue-green alga (Schizothrix calcicola), a hydroid (Obelia bicuspidata), and others. A possible relationship between the peritrich ciliate, Zoothamnium sp., and predilection to mortality following stress is discussed. Comparative data are given for organisms from brown and white shrimp from different ponds and the natural environment between 1969 and 1972 at Grand Terre, Louisiana. Also reported are organisms observed in or on shrimp from floating cages in Alabama and ponds in Florida and Texas, as well as wild stock from Mississippi and Georgia. (Author)

COM-73-11624/6GA Reprint
National Marine Fisheries Service, Seattle, Wash. Northwest Fisheries Center.
UNDERWATER OBSERVATIONS OF FISH BEHAVIOR IN TRAPS,
W. L. High, and I. E. Ellis. 1973, 8p NOAA-73073013
Summary in German.
Pub. in Helgolander Wissenschaftliche Merresuntersuchungen, v24 p341-347 1973.

Descriptors: (*Fishes, Animal behavior), Underwater environments.
Identifiers: Fish traps.

Saturation diving from the undersea laboratories Tektite II, Hydro-Lab and Edalhab permitted scientists to conduct extended in situ observations of fish within the influence of traps. The studies were conducted in the U.S. Virgin Islands, Bahama Islands and Florida during April 1970, December, 1971, and January, 1972. Virgin Island style traps captured the greatest number of fish, although they were smaller than those captured in experimental traps. Trap entrance design was a major factor in its effectiveness. Numerous behavioral characteristics relating to fishes within the influence of the traps were noted, including territorial defense, social behavior and predator-prey relationships. (Modified author abstract)

COM-73-11627/9GA Reprint
National Marine Fisheries Service, Seattle, Wash. Northwest Fisheries Center.
PURSE SEINING FOR JUVENILE SALMON AND TROUT IN THE COLUMBIA RIVER ESTUARY,
Richard C. Johnsen, and Carl W. Sims. 1973, 6p NOAA-73073011
Pub. in Transactions of the American Fisheries Society, v102 n2 p341-345 Feb 73.

Descriptors: (*Columbia River, *Fishing), Salmon, Trout, Equipment, Effectiveness, Marine fishes.
Identifiers: Salmo gairdneri, Oncorhynchus.

A 28-foot gillnetter was modified to catch juvenile salmon and steelhead trout by purse seining in the estuary of the Columbia River. This vessel and equipment enabled effective sampling with relative economy, practicality, and safety. The main limitation was the lack of space for handling fish. The paper primarily describes the vessel, its equipment, the techniques used to fish with a purse seine in the estuary, and secondarily the catches which illustrate its effectiveness. Juvenile salmon and steelhead trout comprised the majority of the catch. Also taken in large numbers were surf smelt, American shad, northern anchovy, and longfin smelt in brackish water and peamouth in fresh water. The incidental catch included cutthroat trout, Pacific herring, eulachon, threespine stickleback, carp, shiner perch, starry flounder, and largescale sucker. (Author)

COM-73-11631/1GA Reprint
National Marine Fisheries Service, Seattle, Wash. Northwest Fisheries Center.
BIOLOGICAL INFORMATION ON COPPER ROCKFISH IN PUGET SOUND, WASHINGTON,
Benjamin G. Patten. 1973, 6p NOAA-73073012
Pub. in Transactions of the American Fisheries Society, v102 n2 p412-416 Feb 73.

Descriptors: (*Marine fishes, Growth), (*Puget Sound, Marine fishes), Feeding habits, Animal ecology, Maturation, Seasonal variations, Abundance, Feeding stuffs.
Identifiers: Sebastes curinus.

Copper rockfish (Sebastes caurinus), a species that is becoming increasingly important as a sport fish, were studied in two shallow areas in Puget Sound, from 1963 to 1968, to obtain information on seasonal availability, growth, maturation, feeding habits, and ecology. Specimens examined ranged from 6.8 to 47.0 cm in fork length and from 0 to 8 years old. Availability was greatest in September and October and least in June and July. Length-weight regression was the same for both sexes but differed by time of year. Crustacea and fish were the principal foods. The rockfish hid in rock interstices in the winter but not in the summer. (Modified author abstract)

COM-73-11641/0GA PC$3.50/MF$1.45
Moss Landing Marine Labs., Calif.
RESULTS OF THE SEA GRANT FISHES SAMPLING PROGRAM FOR THE 1971-1972 SEASON.
Annual rept on part 6,
Gary E. Kukowski. May 73, 54p Contrib-37, CASUC-MLML-TP-73-06 NOAA-73091903
Contract NOAA-2-35137

Descriptors: (*Fishes, Statistical data), (*Fisheries, *California), Sampling, Pajaro River, Elkorn Slough, Monterey Bay.
Identifiers: Sea Grant program.

The report contains results of two activities. The first presents results from sampling the Pajaro River and Elkhorn Slough. The second presents benthic fishes associations from two depths in Monterey Bay, CA. Tables list fishes found in the Pajaro River, the Elkhorn Slough and in Monterey Bay. Similarity indices are tabulated. Finally the statistical significances of the results are also tabulated.

COM-73-11649/3GA PC$2.75/MF$1.45
Puerto Rico Dept. of Agriculture, San Juan.
INVESTIGATION ON THE RESOURCE POTENTIAL OF THE SPINY LOBSTER ('PANULIRUS ARGUS' LATREILLE) IN PUERTO RICO,
Robert Y.Ting. Feb 73, 25p NOAA-73090401
Grant NMFS-2-97-R
Pub. in Puerto Rico Dept. of Agriculture, San Juan, v5 n2 p1-18 Feb 73.

Descriptors: (*Lobsters, Utilization), Abundance, Demand(Economics), Fisheries, Management, Aquaculture, Larvae, Puerto Rico.
Identifiers: Panulirus Argus.

The demand for spiny lobster is expected to increase portionately with the standard of living in Puerto Rico. Consequently, past and present records of the fishery have been examined to determine feasible methods for managing the resource to obtain maximum utilization. The future of the lobster fishery is dependent on the determination of the sources of recruitment of the larvae to Puerto Rico. This requires a large scale oceanographic sampling program. It is recommended that all of the laboratories and institutions concerned with the lobster research should join the effort in undertaking this program.

COM-73-11650/1GA PC$3.00/MF$1.45
Puerto Rico Dept. of Agriculture, San Juan.
A REPORT ON FISHERIES STATISTICS PROGRAM IN PUERTO RICO FROM 1967 TO 1972.
Rept. for Jul 67-Jun 72,
Rolf Juhl, and Jose A. Suarez Caabro. Nov 72, 37p NOAA-73071701
Grant NMFS-2-56-R
Pub. in Puerto Rico Dept. of Agriculture, San Juan, v4 n4 p1-30 Nov 72.

Descriptors: (*Fisheries, Statistical data), Puerto Rico, Shellfish.

The total recorded landings of fish and shellfish during the period from July 1967 through June 1972 for Puerto Rico are reported. The data indicate that Puerto Rico's local production was about five million pounds of fish and shellfish yearly. Details are given on the procedure and field work involved in the collection and processing of statistical data.

COM-73-11652/7GA PC$4.50/MF$1.45
Oregon Fish Commission, Portland.
INVESTIGATION OF THE ABUNDANCE AND BENTHIC DISTRIBUTION OF PINK SHRIMP, PANDALUS JORDANI, OFF THE NORTHERN OREGON COAST.
Final rept., 1 Jul 69-30 Jun 70,
Gerald Lukas, and Michael Hosie. Jul 73, 50p NOAA-73080206
Contract DI-14-17-0001-2134, Grant NMFS-3-R-5

Descriptors: (*Shrimps, Animal migrations), Distribution(Property), Abundance, Surveys, Seasonal variations, Light(Visible radiation), Pacific Ocean, Oregon.
Identifiers: Pandalus jordani.

The fluctuation in abundance of shrimp in the study area is not the result of one particular year class or sex group migrating. The data from the monthly observations suggests that the majority of the population moved offshore during the fall and early winter. In the spring, they reappeared in the study area apparently moving in from the south. Shrimp were not dispersed in a random pattern. There were occasions at certain stations when the shrimp were predominatly of one sex or year class. Because of these nonrandom distributions, it is important that future pink shrimp population assessment surveys include stations distributed over the entire known shrimp grounds. The population off Tillamook Head increased 3.5 million pounds in one five--week period in February and March 1970. The BDS data indicates that shrimp are sometimes 4 to 12-feet off the bottom during the day and this behavior is inversely correlated to the amount of light reaching the bottom.

COM-73-11653/5GA PC$3.50/MF$1.45
Alaska Dept. of Fish and Game, Juneau.
SONIC ASSESSMENT OF SALMON ESCAPEMENTS.
Completion rept. Jul 67-Jun 71,
Allen S. Davis. Apr 72, 26p NOAA-73090603

Descriptors: (*Salmon, Animal migrations), (*Animal migrations, *Sonar equipment), Monitors, Accuracy, Performance evaluation, Test methods, Alaska.

The Sonic Assessment of Salmon Escapements (Formerly Escapement Enumeration Investigations) project was initiated in 1967 with a primary objective of testing the newly developed sonar salmon counter. The electronic counting system was compared with established methods of estimating escapements. Visual counts versus electronic counts showed the system would enumerate salmon with better than 90% accuracy under specific conditions. Information on glacial river operations indicated sonar counts varied relatively the same as spawning ground counts on clearwater streams prior to 1971. An apparent sonar undercount occurred during 1971 and several reasons are offered as explanations to the problem. Recommendations for upgrading the present model sonar counter are presented. (Author)

COM-73-11655/0GA PC$6.75/MF$1.45
Alaska Dept. of Fish and Game, Juneau.
STREAM REHABILITATION, PRINCE WILLIAM SOUND, ALASKA.
Completion rept. Jul 70-Jun 72,
John D. Solf. Apr 73, 94p NOAA-73090604

Descriptors: (*Streams, Channel stabilization), (*Fishing grounds, *Prince William Sound), Salmon, Earthquakes, Animal migrations, Sampling, Abundance.
Identifiers: Oncorhynchus gorbuscha.

Tectonic deformation associated with the earthquake of March 27, 1964 caused base level changes on most of the salmon spawning streams in Prince William Sound. These changes varied from uplift of 32 feet to subsidence of 6 feet. Streams reacted to uplift by degrading and to subsidence by depositing sediments. A stream rehabilitation project was initiated in 1967 and terminated in 1972. Thirty-one streams received remedial treatment during that time. The work was primarily directed toward stabilizing the stream channel in the pre-earthquake intertidal area. A description of the work carried out and biological information on pink and chum salmon is given for each treated stream. In comparison to their pre-earthquake spawning distribution, pink salmon (Oncorhynchus gorbuscha) reacted to stream base level changes by shifting downstream in uplifted streams and upstream in subsided streams. Alevin and escapement data showed that as deformation increased, egg to alevin survival and subsequent escapements decreased. A comparison between groups of treated and uptreated streams suggest that to date, stream rehabilitation has not resulted in increased salmon production. (Author)

COM-73-11664/2GA Reprint
National Marine Fisheries Service, Seattle, Wash. Northwest Fisheries Center.
BOTTOMFISH: OVERLOOKED GEMS IN PUGET SOUND,
Douglas R. Olander. 1973, 4p NOAA-73082913
Pub. in Fishing and Hunting News, p6-11, 4 Aug 73.

Descriptors: (*Fishes, *Puget Sound), Abundance, Fishing, Recreation.
Identifiers: Scorpaenidae, Rockfish, Lingcod.

The article deals with bottomfish as known to anglers in other areas but not too well known in Puget Sound. It is the first in a series on bottomfishing. The term bottomfish refers to many unrelated species which exist on or near the bottom. Virtually all are fine-eating, particularly Washington's rockfish or lingcod, and incredibly abundant and readily available to bottom-fishermen.

COM-73-50807/9GA PC-GPO/MF$1.45-NTIS
National Marine Fisheries Service, Seattle, Wash.
FISHERY PUBLICATIONS, CALENDAR YEAR 1966: LISTS AND INDEXES.
Technical rept.,
Mary Ellen Engett, and Lee C. Thorson. Jul 73, 27p NOAA-TR-NMFS-Circ-382 NOAA-73080602
Paper copy available from GPO $0.35 as C55.13: NMFS-CIRC-382.

Descriptors: (*Bibliographies, *Fisheries), Indexes(Documentation), Documents, Document announcement.

The following series of fishery publications of the National Marine Fishtries Service, National Oceanic and Atmospheric Administration (until October, 1970 the Bureau of Commercial Fisheries of the U. S. Fish and Wildlife Service) in calendar year 1966 are listed numerically (with abstracts) and indexed by author, subject, and geographic area: Circular, Data Report, Fishery Industrial Research, Fishery Leaflet, and Special Scientific Report - Fisheries. (Author)

COM-73-50808/7GA PC-GPO/MF$1.45-NTIS
National Marine Fisheries Service, Seattle, Wash.
FISHERY PUBLICATIONS, CALENDAR YEAR 1965: LISTS AND INDEXES.
Technical rept.,
Lee C. Throson, and Mary Ellen Engett. Jul 73, 20p NOAA-TR-NMFS-Circ-383 NOAA-73080603
Paper copy available from GPO $0.30 as C55.13:NMFS-CIRC-383.

Descriptors: (*Fisheries, Bibliographies), Abstracts, Document announcement, Indexes(Documentation).

The following series of fishery publications of the National Marine Fisheries Service, National Oceanic and Atmospheric Administration (until October, 1970 the Bureau of Commercial Fisheries of the U.S. Fish and Wildlife Service) in calendar year 1965 are listed numerically (with abstracts) and indexed by author, subject, and geographic area: Circular, Data Report, Fishery Industrial Research, Fishery Leaflet, and Special Scientific Report--Fisheries. (Author)

COO-1552-104/GA PC$8.75/MF$1.45
Michigan Univ., Ann Arbor. Dept. Of Human Genetics.
AREA PROGRAM IN POPULATION GENETICS.
J. V. Neel, H. Gershowitz, A. D. Bloom, and C. F. Sing. 17 Apr 73, 134p
Contract AT(11-1)-1552

Descriptors: (*Human populations, *Genetics), Age dependence, Animal growth, Females, Fertility, Genes, Mating, Mortality, Mutation frequency, Pregnancy, Progeny, Rural populations, South america, Statistical mechanics.

For abstract, see NSA 28 06, number 15135.

COO-3267-5/GA PC$3.00/MF$1.45
Jackson Lab., Bar Harbor, Maine.
CHROMOSOMAL BANDING PATTERNS OF TWO PARACENTRIC INVERSIONS IN MICE.
M. T. Davisson, and T. H. Roderick. 1973, 14p
Contract AT(11-1)-3267

Descriptors: (*Chromosomal aberrations, *Configuration), Genes, Mice.

For abstract, see NSA 28 06, number 15138.

COO-894-10/GA PC$3.00/MF$1.45
Minnesota Univ., Minneapolis. Lab. For Biophysical Chemistry.
ENERGY TRANSFER AND UTILIZATION IN BIOLOGICAL SYSTEMS. PROGRESS REPORT, SEPTEMBER 1, 1972--AUGUST 31, 1973.
R. Lumry. 8p
Contract AT(11-1)-894

Descriptors: (*Energy transfer, *Biological models), Albumins, Carbon 13, Chymotrypsin, Fluorescence, Indoles, Lysozyme, Mechanical properties, Nuclear magnetic resonance, Nucleases, Proteins, Spectra, Spectrometers, Spectroscopy, Staphylococcus.

For abstract, see NSA 28 05, number 12539.

N73-29046/2GA PC$3.00/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
ROLE OF LIVING MATTER IN CARBONATE FORMATION.
I. N. Stepanov, L. F. Kamalov, and G. N. Stepanov. Aug 73, 6p NASA-TT-F-15028
Contract NASW-2481
Tran-Transl. Into English from Uzbeksk. Geol. Zh. (Tashkent), No. 6, 1971 p 32-35.

Descriptors: *Blue green algae, *Calcium carbonates, *Evolution (Development), *Rocks, *Submerged bodies, Chemical analysis, Soils.

For abstract, see STAR 1120

PB-223 868/1GA PC$5.25/MF$1.45
Florida Univ., Gainesville. Dept. of Plant Pathology.
LOCATION, IDENTIFICATION, AND CHARACTERIZATION OF PATHOGENS OF THE WATER HYACINTH,
Richard Edward Rintz. 1973, 63p W73-14758, OWRR-B-001-FLA(7)
Contract DI-14-31-0001-3268

Descriptors: (*Aquatic plants, *Plant diseases), (*Fungi, Aquatic plants), (*Aquatic weeds, *Weed control), Inoculation, Plant pathology, Florida, Louisiana, Panama, Puerto Rico, Theses.
Identifiers: *Water hyacinth, Aquatic weed control, Rhizoctonia solani, Biological weed control, Eichhornia crassipes.

Surveys were conducted in Florida, Louisiana, Panama, and Puerto Rico to determine the nature and extent of diseases occurring on water hyacinth (Eichhornia crassipes). Approximately 400 microbial isolates were inoculated onto water hyacinth leaves and seven fungi produced significant lesions. Rhizoctonia solani was the most virulaent pathogen isolated and it caused extensive lesions on aerial parts of the plant. Since it did not appear to be affecting other vegetation in those areas surveyed, its potential as a biocontrol agent should be further investigated. Cephalosporium zonatum was a less virulent pathogen but had a wide host range under artificial inoculation. It was shown to be identical to C. eichorniae and C. fici on the basis of culture morphology and pathogenicity. Fusarium roseum was shown to produce metabolites causing vascular browning in water hyacinth leaves, but it proved to be a weak pathogen. Nigrospora sphaerica, Apiocarpella sp., Curvularia lunata, and Pestalotia sp. were minor pathogens which had not been previously reported on water hyacinth. A lethal disease of anchoring hyacinth (E. azurea) was found in Panama but was not identified.

PB-224 009/1GA PC$6.75/MF$1.45
Alaska Univ., College. Inst. of Water Resources.
THE DRIFT OF BENTHIC INVERTEBRATES IN GOLDSTREAM CREEK, ALASKA.
Master's thesis,
James Raymond Clay. May 73, 92p W73-14866, OWRR-B-017-ALAS(3)

Descriptors: (*Benthos, Abundance), (*Streams, *Water quality), (*Alaska, Benthos), Diptera, Insects, Diurnal variations, Sampling, Light(Visible radiation), Temperature measurement, Theses, Goldstream Creek.
Identifiers: Mayflies, Caddisflies, Ephemeroptera.

The objectives of the report were to determine if there was any diurnal variation in the amount of drift; what organisms were present in the drift; and to evaluate several physical parameters, including light intensity, water temperature and stream discharge with respect to their influence on the drift of macroinvertebrates in Goldstream Creek. Ephemeroptera (Mayflies) and Diptera (two-winged flies) were the only orders represented consistently within the drift. Ephemeroptera exhibited a definite diurnal periodicity during the second, third and fourth (of four) sampling periods, while Diptera exhibited a similar periodicity during the third and fourth sampling days. Both orders peaked in abundance, as caught with a drift net, after sunset. The greatest numbers of both orders captured during the study were collected on the sampling day during which the highest water temperature was measured.

PB-224 016/6GA PC$6.25/MF$1.45
Oregon State Univ., Corvallis.
EFFECTS OF TEMPERATURE, RATION, AND SIZE ON THE GROWTH OF JUVENILE STEELHEAD TROUT, SALMO GAIRDNERI,
Wayne A. Wurtsbaugh. Jun 73, 81p W73-14873, OWRR-B-027-ORE(2)
Contract DI-14-31-0001-3633

Descriptors: (*Trout, Growth), (*Fisheries, Water pollution), Temperature measurement, Food consumption, Animal nutrition, Streams, Seasonal variations, Theses.
Identifiers: *Salmo gairdneri, *Thermal pollution.

The effects of temperature, temperature flution, and fish size on the growth of juvenile steelhead trout (Salmo gairdneri) were studied in experiments which lasted 10-25 days. Groups of fish were fed at ration levels varying from near-starvation to repletion. Decelerating, curvilinear relationships between rates of food consumption and growth were defined in most of the experiments. At ration levels near maintenance, temperatures raised 3-6C above the seasonal ambient temperatures decreased the growth of the trout. As feeding rate increased, the detrimental effect of temperature on growth was ameliorated. (Modified author abstract)

PB-224 056/2GA PC$4.25/MF$1.45
DePauw Univ., Greencastle, Ind.
THE EFFECT OF THERMAL INPUTS ON THE POPULATIONS OF FISH AND MACROINVERTEBRATES IN THE WABASH RIVER.
Technical completion rept.,
J. R. Gammon. Jun 73, 118p W73-14869, OWRR-B-031-IND(4)
Contract DI-14-01-0001-3279
Also available as TR-32 from Purdue Univ., Lafayette, Ind. Water Resources Research Center.

Descriptors: (*Fishes, Water pollution), (*Invertebrates, Water pollution), (*Wabash River, Fishes), Distribution(Property), Electric power plants, Temperature measurement, Animal migrations, Reproduction(Biology), Animal behavior, Abundance, Sampling, Effluents, Adaptation, Indiana.
Identifiers: Water temperature, Thermal pollution.

The distribution of fish and macroinvertebrate populations near two electrical generating stations located on the Wabash River were examined during the summer and early fall for six years. Segments of the river were subdivided into zones corresponding to the imposed thermal conditions and to different kinds of habitat. Fish responded readily to changing thermal conditions and concentrated in areas of the river which provided temperature close to their optimum. Although most species reacted behaviorally to the altered thermal conditions, only two groups appeared to be affected permanently as populations. Flathead catfish (pylodictis Olivaris) responded to higher temperatures with enhanced reproductive success which increased population density two or three times. Redhorse (Moxostoma erythrurum and M. breviceps) are more thermally sensitive and population densities are likely to be reduced with higher temperatures. Complicating factors include the fact that several species of fish, including redhorse and sauger (Stizostedion canadense), appear to rely upon recruitment from tributaries to sustain the mainstem populations. Long-term changes in the density of other species were not detected.

PB-224 059/6GA PC$6.25/MF$1.45
Oregon State Univ., Corvallis.
GROWTH AND FOOD CONSUMPTION OF JUVENILE COHO SALMON EXPOSED TO NATURAL AND ELEVATED FLUCTUATING TEMPERATURES.
Master's thesis,
Larry Bruce Everson. 5 Feb 73, 82p W73-14874, OWRR-B-027-ORE(3)

Descriptors: (*Salmon, Growth), (*Fisheries, Water pollution), Temperature measurement, Food consumption, Feces, Exposure, Diets, Survival, Theses.
Identifiers: *Oncorhynchus Kisutch, *Thermal pollution.

Relationships between rates of food consumption, growth and food assimilation of juvenile coho salmon were determined for different experimental temperature conditions during the short-term, 30-day experiments. The efficiency of food assimilation was determined by measuring the quantities of food consumed and the amounts of fecal wastes produced. Concurrent long-term studies were conducted over four- and eight-month periods under similar temperature conditions. Growth rates of salmon at equivalent ration levels were compared

between the short and long-term experiments. The growth rates of control fish were generally greater than those of fish exposed to elevated temperatures for each of the five short-term experiments. Increased rations ameliorated the effects of elevated temperatures on growth rates. (Modified author abstract)

UCB-34-P-186-X-3/GA PC$3.00/MF$1.45
California Univ., Berkeley.
RECOVERY AND ANALYSIS OF MUTANT CONTROLLING DEVELOPMENT OF DROSOPHILA MELANOGASTER. PROGRESS REPORT.
1972, 12p
Contract AT(04-3)-34

Descriptors: (*Drosophila, *Growth), Biosynthesis, Dna, Enzymes, Hormones, Mutants, Proteins, Ribosomes, Rna.

For abstract, see NSA 28 06, number 15165.

UCSC-34-P-185-X-3/GA PC$3.00/MF$1.45
California Univ., Santa Cruz.
ORGANELLES AND THE REGULATION OF PLANT METABOLISM. TECHNICAL PROGRESS REPORT, AUGUST 1, 1972--PRESENT.
H. Beevers. 5p
Contract AT(04-3)-34

Descriptors: (*Plants, *Metabolism), Biosynthesis, Cell constituents, Dna, Enzymes, Lecithins, Mitochondria, Phospholipids, Proteins, Ribosomes.

For abstract, see NSA 28 05, number 12599.

UCSD-34-P-150-X-2/GA PC$3.00/MF$1.45
Scripps Institution of Oceanography, la Jolla, Calif.
GENETIC CONTROL OF GAMETOGENESIS IN DROSOPHILA MELANOGASTER. PROGRESS REPORT, MAY 1972--MAY 1973.
1973, 4p
Contract AT(04-3)-34

Descriptors: (*Drosophila, *Gametogenesis), Genetics, Heterochromosomes, Spermatogenesis.

For abstract, see NSA 28 06, number 15171.

UCSD-34-P-159-X-4/GA PC$3.00/MF$1.45
California Univ., San Diego.
SYNTHESIS AND SECRETION OF HYDROXYPROLINE-RICH GLYCOPROTEINS OF HIGHER PLANTS. PROGRESS REPORT, AUGUST 1, 1972--JULY 31, 1973.
M. J. Chrispeels. 10p
Contract AT(04-3)-34, PA 159

Descriptors: (*Glucoproteins, *Biosynthesis), Cell wall, Endoplasmic reticulum, Hydroxyproline, Plant cells, Plants, Secretion.

For abstract, see NSA 28 05, number 12601.

6D. Bionics

COM-73-11714/5GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
ARTIFICIAL INTELLIGENCE. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1970-Sep 73,
Edward J. Lehmann. Oct 73, 122p* NTIS-WIN-73-067

Descriptors: (*Artificial intelligence, *Bibliographies), Automata theory, Computer programming, Pattern recognition, Decision making, Learning machines, Algorithms, Robots, Problem solving, Mathematical logic.

The NTISearch bibliography contains 117 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. All aspects of research in the field of artificial intelligence are presented. This includes theory, robot systems, decision making, automatic control, and pattern recognition. (Author)

JPRS-60103/GA PC$11.50/MF$1.45
Joint Publications Research Service, Arlington, Va.
IDEATION AND AUTOMATA,
D. A. Pospelov, and V. N. Pushkin. 24 Sep 73, 186p
Trans. of mono. Myshlenie i Avtomaty, Moscow, 1972 224p.

Descriptors: (*Systems engineering, *Creativity), (*Cybernetics, USSR), Problem solving, Psychometrics, Mathematical logic, Concepts, Linear programming, Control equipment, Automata theory, Models, Digital computers, Translations.
Identifiers: Intuition.

The report contains an analysis of the process of solving problems arising when controlling large systems. The results of experimental research on intuition, conducted using new objective methods, are submitted. A psychological concept is formulated that permits the planning of development of new methods of programming in cybernetics, and means are described of developing devices capable of controlling large systems of these methods.

ORO-1597-5/GA PC$3.00/MF$1.45
Tennessee Univ., Knoxville. Dept. Of Zoology.
STUDIES ON NUTRITION OF THE PREPLACENTAL EMBRYOS OF THE MAMMAL. SEVENTH YEAR PROGRESS REPORT.
J. C. Jr. Daniel. (nd). 7p

Descriptors: (*Embryos, *Metabolism), Animal growth, Biosynthesis, Body fluids, Carboxylic acids, Chemical analysis, Mammals, Marsupials, Nutrients, Rna, Secretion, Tissue cultures, Uterus.

For abstract, see NSA 28 05, number 12573.

6E. Clinical Medicine

AD-767 678/6GA PC$4.00/MF$1.45
Naval Postgraduate School Monterey Calif
USE OF PATTERN ANALYSIS FOR PREDICTING HEROIN DEPENDENCY.
Master's thesis
Raymond Alexander Ritchey, and Robert Lloyd Spahr. Jun 73, 39p

Descriptors: (*Narcotics, Addiction), (*Addiction, Mathematical prediction), Questionnaires, Pattern recognition, Statistical processes, Factor analysis, Correlation techniques, Students, Behavior, Theses.
Identifiers: Heroin dependency, Addicts, Methadone clinics, Junior colleges.

The objective of the thesis was to apply and verify pattern analysis as an effective statistical tool in solving a practical problem, to gain insight into the historical/biographical factors that may be used to predict heroin dependency. A thiry-six item questionnaire, developed from research into the background of heroin addicts, and to students at junior colleges in the San Francisco and Monterey Bay areas. Their responses were then fed into a validation and cross-validation program based on pattern analysis. (Modified author abstract)

AD-767 698/4GA PC$2.75/MF$1.45
Naval Postgraduate School Monterey Calif
ON THE EXISTENCE OF RELATIVE MORAL HAZARD.
Technical rept.,
David Whipple, Edward Brill, and David Walsh. Jul 73, 21p Rept no. NPS-55WP73071A

Descriptors: (*Medicine, Costs).
Identifiers: *Medical services, Health insurance.

The paper points out that for purposes of estimating the total cost of various health care bills providing comprehensive prepaid care the relevant concept is not 'moral hazard' as usually defined, but rather relative moral hazard, the tendency for an individual to increase utilization over what they might have done under a fee-for-service plus coinsurance system. Although the empirical results are tentative and preliminary, they seem to indicate that great per capita jumps in the consumption of free inpatient care may well have been exaggerated. (Author)

AD-767 748/7GA PC$3.00/MF$1.45
Seoul National Univ (Republic of Korea) Coll of Medicine
KOREAN HEMORRHAGIC FEVER.
Annual rept. no. 4, 10 Dec 71-8 Dec 72,
Ho Wang Lee. 23 Apr 73, 46p ARDG(FE)-464-4
Grant DA-CRD-AFE-s92-544-71-g167
See also report dated Mar 72, AD-745 219.

Descriptors: (*Virus diseases, *Southeast Asia), (*Arboviruses, Virus diseases), Epidemiology, Etiology, Immunology, Fluorescent antibody techniques, Disease vectors, Rodents, Serodiagnosis.
Identifiers: *Hemorrhagic fever, *Korea.

Korean hemorrhagic fever (KHF) occurred for the first time in Korea, 1951, although it had previously been known to both the Japanese and Russians. After Korean war, the disease has been fixed in the areas of DMZ as an endemic one, and from 100 to 300 cases have been reported every year. The aims of this project are epidemiologic investigation of the disease in the civilian endemic areas, to isolation of the causative agent of KHF, and demonstration of specific antibodies of KHF by fluorescent antibody technic. The outbreak of patients had been localized in the vicinity of DMZ until 1970 but in 1971 affected the middle districts and in 1972 invaded the southern parts of South Korea. The number of patients and the areas of KHF in 1972 were investigated extensively and found there were 389 hospitalized cases with 7.7% fatality. Field rodents were collected and their ecto-parasites were classified. The populations of field rodents and their ecto-parasites were greatest when the incidence of KHF reached its peak. The attempts to isolate the etiologic agent from patients resulted in failure but 10 strains of unknown agents were isolated from rodents collected in the endemic foci of KHF in 1972. Incidence of Au-antigen in the KHF patients were 7% among 170 tested sera. (Modified author abstract)

AD-767 754/5GA PC$3.00/MF$1.45
National Inst of Health Seoul (Republic of Korea) Div of Parasitology
EPIDEMIOLOGY AND TRANSMISSION OF HUMAN FILARIASIS OF INLAND KOREA IN THE ABSENCE OF KNOWN MOSQUITO VECTOR.
Annual rept. no. 4, 15 May 72-14 May 73,
Dong Chan Kim. 24 Aug 73, 49p ARDG(FE)-465-4
Grant DA-RDRF-S92-544-72-G184
See also report dated Jul 72, AD-748 427.

Descriptors: (*Filariae, South Korea), (*Parasitic diseases, Filariae), Epidemiology, Culicidae, Disease vectors, Parasites.
Identifiers: *Filariasis, Bruzia malayi, Microfilaria, Anopheles sinensis.

The present investigation was conducted to elucidate the condition, pattern, and transmission of the human filariasis which is endemic in inland Korea in the absence of known mosquito vector. This report presents the results of the last two years of an investigation conducted in the Yongju area of Kyungsangbuk-do. Microfilaria positive rates among inhabitants were 8.1% from a total of 2,178 person examined. All of the microfilaria (mf) positive were found infected with Brugia malayi,

showing typical nocturnal periodicity. In mosquito population density, Anopheles sinensis was most predominant, and next Culex pipiens pallens. In the vector potential test of B. malayi, A. sinensis was very susceptible and C. pipiens pallens was not susceptible. In animal survey, 4 of 56 cattle examined with night blood were found positive with microfilariae. Under the present progress of such fact-finding survey, together with biting preference of the mosquitos and with other epidemiological data, A. sinensis was considered to play a role in the transmission as the most probable vector species of B. malayi in this area. (Modified author abstract)

AD-767 785/9GA PC$22.50/MF$1.45
Walter Reed Army Medical Center Washington D C
ANNUAL PROGRESS REPORT (FISCAL YEAR 1973) OF THE CLINICAL INVESTIGATION SERVICE.
1973, 406p
See also AD-410 243.

Descriptors: (*Medical research, Reports), Immunology, Kidneys, Diseases, Cardiovascular diseases, Transplantation, Endocrine glands, Blood diseases, Neoplasms, Radiography, Pathology, Pharmacology, Psychiatry, Neurology, Hematology.
Identifiers: Hemodialysis, Endocrinology, Gynecology, Obstetrics, Pediatrics.

Fresented are summaries of current research in all phases of clinical medicine.

AD-767 865/9GA Reprint
Brooke Army Medical Center Fort Sam Houston Tex
ERYTHROCYTE SODIUM TRANSPORT AND MEMBRANE ADENOSINE TRIPHOSPHATASE IN PATIENTS WITH THERMAL INJURY,
George M. Helmkamp, Jr., Jerl P. Blackwell, and Douglas W. Wilmore. 20 Mar 73, 8p
Availability: Pub. in Clinica Chimica Acta, v47 p5-12 1973.

Descriptors: (*Burns, Sodium), (*Erythrocytes, Burns), (*Adenosine phosphates, Burns), (*Sodium, Erythrocytes), Glycolysis, Membranes(Biology), Shock(Pathology), Osmosis, Hemolysis.
Identifiers: *Thermal burns.

Various aspects of erythrocyte sodium movement have been measured in 48 patients with extensive thermal injury. Intracellular sodium and potassium concentrations were determined and found to be identical to those observed in a group of healthy individuals of comparable age. Flux studies, using (22)Na, revealed no differences between burn patients and controls in the ouabain-sensitive transport of sodium from the cell; only a slight decrease in the ouabain-sensitive transport of sodium from the cell; only a slight decrease in the ouabain-insensitive exit was noted among burn patients. Furthermore, there was no statistically significant difference in sodium influx for the two groups. Consistent with these results were essentially normal values for red cell membrane adenosine triphosphatase activities, including Km and V max. Burn patients, however, did demonstrate nearly a 2-fold increase in red cell hexokinase activity, and the implications of this finding are discussed with respect to red cell glucose utilization and membrane cation permeability. (Author)

AD-767 867/5GA Reprint
Brooke Army Medical Center Fort Sam Houston Tex
WEIGHT LOSS FOLLOWING THERMAL INJURY,
Thomas W. Newsome, Arthur D. Mason, Jr., and Basil A. Pruitt, Jr. 31 Aug 72, 3p
Availability: Pub. in Annals of Surgery, v178 n2 p215-217 Aug 73.

Descriptors: (*Burns, *Thermal radiation), (*Weight, Burns), Wounds + injuries, Metabolism, Energy, Dehydration.
Identifiers: *Thermal burns.

A pattern of weight loss has been found in patients with thermal injuries. The magnitude and duration are directly related to the extent of injury. A maximum mean loss of 22% of preburn weight occurred 8 weeks postburn in patients with burns covering more than 40% of the total body surface. Weight stabilization preceded definitive wound closure and was considered to reflect diminishing metabolic demands. (Author)

AD-767 870/9GA Not available NTIS
Defence and Civil Inst of Environmental Medicine Downsview (Ontario)
RECOLLECTIONS OF R. BARANY,
G. F. Dohlman. 1973, 4p Rept no. DCIEM-888
Availability: Pub. in the Advances in Oto-Rhino-Laryngology, n.d. p12-14.

Descriptors: (*Medical personnel, *Otorhinolaryngology), Vestibular apparatus, History, Austria, Medical research, Canada.
Identifiers: Barany Robert.

Barany started his career at the ear clinic in Vienna around the turn of the century. At that time Vienna was the medical center for the whole Austrian empire and its reputation attracted patients and otologists from Europe and the Orient, as well as the whole American continent. In 1906, Barany had published a comprehensive study of the reactions of patients and normal people to rotational and caloric stimulations of the semicircular canals. The results and ideas which Barany presented in this and other papers stimulated a vivid research in the vestibular field over the next few years. When World War I came Barany was stationed in the fortress of Przemysl where he, together with a surgeon, Dr. Ernst Jeger, made valuable contributions to the now totally accepted closed treatment of head wounds on the battlefield.

AD-768 028/3GA PC$4.00/MF$1.45
Rand Corp Santa Monica Calif
MEDICAL COMPUTING: CONS AND PROS,
Thomas L. Lincoln. Feb 73, 39p Rept no. P-4965

Descriptors: (*Medicine, *Computers), (*Data processing systems, Medicine), Records, Effectiveness, Information retrieval.
Identifiers: *Medical computer applications, Biomedical information systems, Medical services.

The author evaluates the application of computer technology to medicine and health services. Discussed are the efficiency of data banks in information retrieval, and the costs and utilization of computer hardware and software. Recommendations are made for improvements.

AD-768 101/8GA PC$4.25/MF$1.45
Letterman Army Medical Center San Francisco Calif
PRESENT CONCEPTS IN INTERNAL MEDICINE. VOLUME VI NUMBER 4, JULY-AUGUST 1973. PEDIATRICS SYMPOSIUM,
James L. Stewart, Jr., and Lottie B. Applewhite. Aug 73, 110p*
Errata sheet inserted. See also report dated Jun 73, AD-763 850.

Descriptors: (*Children, *Medicine), Symposia, Septicemia, Infants, Bile Pigments, Hepatitis viruses, Antigens + antibodies, Heart, Pathology, Physiology, Hormones, Growth, Hypoglycemia, Parasitic diseases, Drugs.
Identifiers: *Pediatrics, Hyperbilirubinemia, Bezoar, Lactobezoar, Aortic atresis.

Contents:
Neonatal sepsis;
Etiology of hyperbilirubinemia in normal infants;
Lactobezoar (inspissated milk syndrome);
Hepatitis associated antigens (HAA);
Aortic atresia;
Aortic valve atresia;
Human growth hormone (HGH);
Hypoglycemia, associated seizures and isolated growth hormones deficiency;
Drugs for parasitic infections.

AD-768 124/0GA PC$3.00/MF$1.45
Tennessee Univ Knoxville
METABOLIC RESPONSE OF ANIMAL HOSTS TO INFECTION WITH PSEUDOMONAS AERUGINOSA.
Annual progress rept. no. 1, 1 Jul 72-30 Jun 73,
John M. Woodward. Aug 73, 44p
Contract DADA17-72-C-2159

Descriptors: (*Pseudomonas aeroginosa, Infections), Metabolism, Immunology, Toxins + Antitoxins, Lethal dosage, Blood coagulation, Hematology, Blood chemistry, Liver, Pathology, Laboratory animals, Experimental data.

Electrophoretic and immunological studies of Pseudomonas aeruginosa lethal toxin revealed that partially purified preparations obtained by ammonium sulfate precipitation from cultures grown on soft tryptic soy agar were composed of at least three fractions. Two of these were inert and presumably were culture medium contaminants and/or cell proteins, while the third fraction exhibited lethal activity for mice, and constituted less than 20 percent of the three components. Toxin activity in rabbits was similar to that often reported for endotoxin. Delayed blood clotting, leucopenia and reduction in blood plates was observed, along with a febrile response. The lethal effect was dose dependent, with an average of 0.1 mg constituting one LD50 for rabbits and 0.25 microgram one LD50 for 20g mice. Unlike endotoxin, Pseudomonas aeruginosa lethal toxin is heat labile and inactivated by trypsin. Also, antitoxin against lethal toxin failed to react with endotoxin in precipitin studies. The toxin also stimulated excessive increases in serum aldolase, phosphohexose isomerase and lactate dehydrogenase. Such changes have also been observed following infection with a variety of gram positive and gram negative bacteria, and with gram negative endotoxin, reflecting severe liver damage mechanisms not well understood. (Modified author abstract)

AD-768 179/4GA PC$5.25/MF$1.45
Letterman Army Inst of Research San Francisco Calif
LETTERMAN ARMY INSTITUTE OF RESEARCH ANNUAL PROGRESS REPORT, FY 1973.
Annual progress rept. 1 Jul 72-30 Jun 73,
William A. Akers. 30 Jun 73, 180p Rept no. LAIR-17
Errata sheet inserted. See also report dated 30 Jun 72, AD-749 471.

Descriptors: (*Military medicine, *Army research), Medical research, Reports, Diseases, Skin, Hemorrhage, Shock(Pathology), Face, Head, Wounds + Injuries, Pathology.
Identifiers: Progress reports.

These studies are devoted to basic and applied research in skin diseases of military importance; the effects of hemorrhagic shock on the heart and brain; the development of techniques for the early management of complex maxillofacial wounds and injuries and the identification of diseases of the oral and maxillofacial tissues which are of special importance to the field soldier. Summaries of those clinical investigations at Letterman Army Medical Center involving collaborative studies or requiring major personnel, laboratory studies or animal resources support from LAIR are included. (Modified author abstract)

AD-768 221/4GA PC$3.00/MF$1.45
Oregon Univ Dental School Portland Biophysics Lab
ELECTRICAL ENHANCEMENT OF HEALING IN COMBAT INJURIES TO HARD AND SOFT TISSUES.
Annual summary rept.,
B. S. Savara, R. W. Fields, and R. T. Tacke. 31 Jul 73, 30p*
Contract DADA17-70-C-0075

Descriptors: (*Wounds + injuries, Healing), (*Electrotherapy, *Healing), (*Bone, Electrotherapy), Biophysics, Metabolism, Piezoelectric effect, Mitosis, Experimental data, In vivo analysis, In vitro analysis, Tissues(Biology), Fractures(Bone), Battle injuries.
Identifiers: Bioelectricity.

Investigations are in progress to evaluate the feasibility of using electrical currents to routinely enhance the healing of wounds to hard and soft tissues. Studies are underway in which the effects of electrical currents on processes related to wound healing are being characterized at three different levels of biological organization to permit an efficient assessment of the feasibility of the concept and to permit optimization of effective administration procedures. The preliminary work to date has revealed encouraging influences of electrical energy at the cellular level in the form of increased mitotic activity and at the level of the intact organism in enhanced formation of osseous reparative tissue and related tissue and systemic reactions. These results are encouraging and the studies are being extended. The present program has prime military significance in terms of increased manpower efficiency and in the enhancement of effectiveness of various therapeutic procedures. Furthermore, these objectives are being obtained at greatly reduced cost by cross utilization of skills and facilities in a multidisciplinary team effort.

AD-768 233/9GA Reprint
Brooke Army Medical Center Fort Sam Houston Tex Army Inst of Surgical Research
MASSIVE ACCUMULATION OF ALVEOLAR LATTICE FORMATIONS AND LAMELLAR BODIES IN EXPERIMENTAL PHYCOMYCOTIC PNEUMONITIS,
Paulette C. Langlinais, and Daniel W. McKeel, Jr. 19 Jan 73, 11p
Availability: Pub. in Texas Reports on Biology and Medicine, v31 n2 p203-213 Summer 1973.

Descriptors: (*Lungs, Pathology), (*Fungi, Lungs), Histology, Infections.
Identifiers: Rhizopus rhizopodoformis, *Pneumonitis, *Medical mycology, *Fungus diseases.

Massive accumulation of lattice material and lamellar bodies occurs in rat lungs in experimental fungal pneumonitis. Interstitial hypercellularity and hyperplasia of type II pneumocytes are also present. Lattice formations were found in altered type II cells, and closely associated with type I pneumocytes. (Author)

AD-768 236/2GA Reprint
Brooke Army Medical Center Fort Sam Houston Tex Army Inst of Surgical Research
SYSTEMIC AND PULMONARY HEMODYNAMIC CHANGES ACCOMPANYING THERMAL INJURY,
Morris J. Asch, Richard J. Feldman, Harrel L. Walker, F. D. Foley, and Richard L. Popp. 23 Jun 72, 4p
Availability: Pub. in Annals of Surgery, v178 n2 p218-221 Aug 73.

Descriptors: (*Burns, *Lungs), Blood circulation, Pathology, Physiology, Dogs, Experimental data.

Changes in pulmonary and systemic hemodynamics have been studied in animals with large burns after recovery of consciousness. Increased resistances were observed in both systems and was somewhat more prominent in the pulmonary circulation. Cardiac output responded more promptly to colloid resuscitation than to administration of electrolyte solutions in these animals. Postmortem examination of the lungs revealed only minimal focal interstitial edema and a more uniform perfusion pattern than was observed in unburned control animals.

AD-768 247/9GA Reprint
Armed Forces Inst of Pathology Washington D C
PROBLEMS IN THE DIAGNOSIS OF MALIGNANT MELANOMA OF THE CHOROID AND CILIARY BODY. THE 1972 ARTHUR J. BEDELL LECTURE,
Lorenz E. Zimmerman. 1972, 13p
Presented at the annual Wills Eye Hospital Conference (24th), 5 Feb 72, Philadelphia, Pa.
Availability: Pub. in American Jnl. of Ophthalmology, v75 n6 p917-929 Jun 73.

Descriptors: (*Cancer, *Eye), Histology, Pathology, Ophthalmology, Diagnosis, Neoplasms.
Identifiers: *Melanoma.

Ophthalmic pathologists are afforded frequent opportunities to observe the many problems that confront clinical ophthalmologists in the differential diagnosis of malignant melanoma of the uveal tract. More than one 10th of all uveal melanomas recognized histopathologically are tumors that had not been suspected clinically. Hemorrhagic detachments of the pigment epithelium and/or of the retina, non-hemorrhagic detachments of the uvea and/or the retina, inflammatory lesions, and a variety of other tumors have been the most frequently observed simulating lesions. By more prolonged periods of clinical investigation, utilizing indirect as well as direct ophthalmoscopy, retro- and transillumination, slit-lamp examination of the fundus, fluorescein angiography, and such highly specialized procedures as ultrasonography and measurements of the uptake of radioactive phosphorus by the lesion, it is believed that the percentage of errors can be reduced. Examination must also include careful evaluation of the other eye, thorough medical, laboratory, and radiologic investigations.

AD-768 248/7GA Reprint
Armed Forces Inst of Pathology Washington D C
REPAIR AFTER XENON ARC PHOTOCOAGULATION. 3. AN ELECTRON MICROSCOPIC STUDY OF THE EVOLUTION OF RETINAL LESIONS IN RHESUS MONKEYS,
Ingolf H. L. Wallo, and Mark O. M. Tso. 1973, 16p
See also AD-764 212.
Availability: Pub. in American Jnl. of Ophthalmology, v75 n6 p957-972 Jun 73.

Descriptors: (*Retina, *Burns), (*Ophthalmology, *Pathology), Histology, Electron microscopy, Eye, Monkeys, Experimental data.
Identifiers: Photocoagulation.

The evolution of two groups of retinal lesions produced by photocoagulation in the eyes of the rhesus monkey was studied by electron microscopy. In the first group, Muller cells in the lesions became hypertrophic, filled the retinal defect, and reformed an outer limiting membrane. In the second group, proliferated retinal astrocytes originating from the viable edges of the lesions provided repair and formed a glial scar. Two types of adhesion were seen. In the first type, glial cells were joined to proliferated cells of the retinal pigment epithelium either along the outer aspect of the repaired retina or within the glial retinal scar. In the second type glial cells became intimately aligned along the cuticular portion of Bruch's membrane. Two types of hyperpigmentation of the lesions were observed. In the first, it was attributable to pigment-laden macrophages. In the second, it was accounted for by an accumulation of electron-dense material within cells of the retinal pigment epithelium.

AD-768 249/5GA Reprint
Armed Forces Inst of Pathology Washington D C
ORGAN CULTURE OF HUMAN RETINAL PIGMENT EPITHELIUM AND CHOROID: A MODEL FOR THE STUDY OF CYTOLOGIC BEHAVIOR OF RPE IN VITRO,
Mark O. M. Tso, Daniel Albert, and Lorenz E. Zimmerman. 1 May 73, 14p
Availability: Pub. in Investigative Ophthalmology, v12 n8 p554-566 Aug 73.

Descriptors: (*Retina, Tissue culture), (*Cytology, Retina), Ophthalmology, Visual inspection, Electron microscopy, Phagocytes, Humans, Pathology, Histology.

Organ culture of human choroid and retinal pigment epithelium was maintained in medium RPMI 1640 with Millipore filter as support for various periods up to six weeks. The tissues were obtained from autopsy and surgival materials. The cultures were studied by light and electron microscopy. The tissues maintained by this culture method appeared to be a relatively normal active state, without overt degeneration or proliferation for at least two weeks. The RPE in culture showed capability of phagocytosing particles of thorotrast. Such a culture system serves as a useful model for study of the cytologic behavior of human retinal pigment epithelium (RPE) in vitro, especially during the early stages of disease processes. (Author)

AD-768 250/3GA Reprint
Armed Forces Inst of Pathology Washington D C
JUVENILE NASOPHARYNGEAL ANGIOFIBROMA,
John L. Hicks, and John F. Nelson. 1973, 11p
Availability: Pub. in Oral Surgery, Oral Medicine, Oral Pathology, v35 n6 p807-817 Jun 73.

Descriptors: (*Neoplasms, *Throat), Pathology, Males, Histology, Medicine, Diagnosis, Statistical data, Aging(Physiology).
Identifiers: Angiofibromas, Adolescence.

The juvenile nasopharyngeal angiofibroma is a histologically denign, clinically aggressive neoplasm arising primarily in the nasopharynx of adolescent males. Diagnosis and treatment often present difficulty. The potential for these tumors to involve the perioral structures requires that the clinician conducting an intraoral examination be aware of the characteristic signs and symptoms. The pathologic, clinical, and statistical findings in a series of fifty-eight cases are discussed. This is believed to be the largest documented series reported in the literature. (Author)

AD-768 251/1GA Reprint
Armed Forces Inst of Pathology Washington D C
PRIMARY EPITHELIAL NEOPLASMS OF THE LACRIMAL SAC,
Stephen J. Ryan, and Ramon L. Font. 1973, 16p
Availability: Pub. in American Jnl. of Ophthalmology, v76 n1 p73-88 Jul 73.

Descriptors: (*Eye, *Neoplasms), Ophthalmology, Diagnosis, Histology, Pathology, Medicine, Cancer.
Identifiers: *Lacrimal gland, Prognosis.

A clinicopathologic study of 27 primary epithelial neoplasms of the lacrimal sac has been presented. The most common clinical manifestations were epiphora and the presence of a mass. The tumors were classified in two main groups: papillomas and carcinomas. These were subdivided in several groups according to the histopathologic criteria established. Regarding the biologic behavior of these tumors, there was a tendency to local recurrences over a period of several years (median follow-up was seven years). Of the group of 18 papillomas, 11 were benign. Of the remaining seven, the authors found an invasive squamous cell carcinoma in three tumors and a mucus-secreting adenocarcinoma in another at the time the tissue was initially submitted for histologic examination. These tumors have a favorable prognosis for pa-

tient survival, which would indicate caution against overly aggressive surgical procedure in elderly patients. Only two of 27 patients died as a result of local invasion by the tumor.

AD-768 252/9GA Reprint
Armed Forces Inst of Pathology Washington D C
THE MARFAN SYNDROME. A HISTOPATHOLOGIC STUDY OF OCULAR FINDINGS,
Michael S. Ramsey, Ben S. Fine, J. A. Shields, and Myron Yanoff. 1973, 16p
Availability: Pub. in American Jnl. of Ophthalmology, v76 n1 p102-116 Jul 73.

Descriptors: (*Eye, *Pathology), Ophthalmology, Histology, Electron microscopy, Diagnosis, Diseases.
Identifiers: *Marfans syndrome, Arachnodactyly, Hereditary diseases.

Three eyes removed at autopsy from two children with presumed Marfan's syndrome were examined grossly and by scanning and transmission electron microscopy. Extensive transillumination of the iris diaphragm was a characteristic finding in both cases and was compared with the histopathologic and clinical studies reported in the literature. Increased transillumination of the iris diaphragm may prove useful in diagnosing cases of presumed or well-characterized Marfan's syndrome, especially in the absence of ectopia lentis.

AD-768 253/7GA Reprint
Armed Forces Inst of Pathology Washington D C
IMMUNOFLUORESCENT DETECTION OF ANTIBODIES TO NONLYMPHOID TISSUES IN ANTITHYMOCYTE IGG,
L. James Kennedy, Jr., John J. Smith, and Lewis D. Johnson. 13 Mar 73, 8p
Availability: Pub. in Laboratory Investigation, v29 n1 p73-80 1973.

Descriptors: (*Antigens + antibodies, Lymphocytes), (*Lymphocytes, *Thymus), Immune serums, Gamma globulin, Immunology, Transplantation, Tissues(Biology), Rabbits, Dogs.
Identifiers: *Thymocytes, Immunasuppression.

The paper report the in vitro reactivity of a highly immunosuppressive pool of rabbit antidog thymocyte IgG (RADTG) with nonlymphoid canine tissue as detected by indirect immunofluorescence on frozensections. This method avoids the problem of altering the tissue antigens by fixation and processing, as in the method of Sainte-Marie and also does not depend on the ability of the antigens in question to be extracted and solubilized by saline. Further, indirect immunofluorescence allows the identification of the specific cells and structures within a particular organ that carry those antigens. Isolated preparations of basement membrane and vascular endothelium were also used to detect antiendothelial and antibasement membrane antibodies with greater precision.

AD-768 257/8GA Reprint
Armed Forces Inst of Pathology Washington D C
CASE FOR DIAGNOSIS,
Chapman H. Binford, and William D. Dolan. 1973, 2p
Availability: Pub. in Military Medicine Jnl., v138 n9 p594-595 Sep 73.

Descriptors: (*Histoplasma, *Pathology), Histology, Diagnosis, Fungi, Infectious diseases, Medicine, Therapy.
Identifiers: Histoplasmosis, *Medical mycology, Fungus diseases.

A 36 year old woman was admitted to a hospital with chills and drenching night sweats for approximately four weeks. She had also noted increasing weakness, malaise, a 10-pound weight loss, and tightness in the substernal area with some accompanying shortness of breath on mild exertion. She also had a slight 'cigarette cough'. The patient had recently returned from West Pakistan after a stay of one year, during which time she visited India. Sections from the liver biopsy and the iliac crest marrow showed small foci of epithelioid cell granulomas. Gomori methenamine-silver and Gridley fungus stains revealed a few oval bodies in the granulomas. These were morphologically typical for Histoplasma capsulatum. Cultures of the sternal and iliac crest marrow produced colonies of H. capsulatum. The patient was given parenteral amphotericin B and Saramycetin (RO 2-7758). The temperature rapidly dropped to normal. In a short time, she was discharged free of symptoms and has remained well over a follow-up period of ten years.

AD-768 258/6GA Reprint
Armed Forces Inst of Pathology Washington D C
CASE FOR DIAGNOSIS,
Sigurds O. Krolls. 1973, 2p
Availability: Pub. in Military Medicine, v138 n10 p649 and 668 Oct 73.

Descriptors: (*Mouth, *Neoplasms), Dentistry, Histology, Pathology, Diagnosis, Therapy, Surgery.
Identifiers: *Oral diseases.

A 47 year old Caucasian woman presented a rapidly enlarging mass involving the right maxillary alveolar ridge. There was expansion of both the palatal and buccal cortices, and the tumescence extended down toward the occlusal surfaces of the teeth but did not cover them. The teeth did not seem to be displaced, and there was no ulcerative breakdown of the overlying mucosa. The patient had noticed the swelling for eight weeks preceding presentation. Upon clinical examination, the mass appeared firm and nonmobile. There was no crepitus, and the mucosa did not seem warmer than adjacent soft structures. The teeth were not mobile, and they registered as vital on the vitalometer, which indicated that there was no pulpal disease. The Panorex roentgenogram disclosed an apparent breakdown of the tuberosity towards the oral cavity. There appeared to be an ill-defined, somewhat lytic lesion within this area. It can be assumed, therefore, from the clinical appearance and the Panorex view, which shows some bone destruction, that the patient has a tumor. Biopsy revealed a osteogenic sarcoma sometimes classified as osteoblastic or sclerosing. A hemimaxillectomy was done. The patient is apparently well and living without tumor three years postoperatively.

AD-768 259/4GA Reprint
Armed Forces Inst of Pathology Washington D C
MEASLES MACULOPATHY ASSOCIATED WITH SUBACUTE SCLEROSING PANENCEPHALITIS,
Ramon L. Font, Edwin H. Jenis, and Kenneth D. Tuck. 3 Apr 73, 8p
Availability: Pub. in Archives of Pathology, v96 p168-174 Sep 73.

Descriptors: (*Measles viruses, Retina), (*Retina, *Pathology), Eye, Ophthalmology, Children, Central nervous system, Diseases.
Identifiers: Measles, Encephalitis, Subacute sclerosing panencephalitis.

An 8-year-old white boy died two months after onset of a rapidly progressive neurologic syndrome. Ophthalmoscopic examination revealed a pigmentary maculopathy in his right eye associated with bilateral papilledema. Both eyes were obtained postmortem. Sections of the right eye revealed numerous intranuclear inclusion bodies in glial cells as well as in all three layers of neurons in the macular region. Electron microscopy of the tissue, which was fixed in formaldehyde solution, demonstrated that the intranuclear inclusions were composed of filamentous tubular structures of a paramyxovirus morphologically consistent with the measles virus. Immunofluorescent studies disclosed for the first time the presence of measles antigen in the infected retinal cells. Immunoultrastructural methods utilizing horseradish peroxidase-conjugated antibodies clearly showed the intranuclear and cytoplasmic viral nucleocapsids in the retina. (Author)

AD-768 276/8GA Reprint
Armed Forces Inst of Pathology Washington D C
MAMMARY SILICONE GRANULOMA. MIGRATION OF SILICONE FLUID TO ABDOMINAL WALL AND INGUINAL REGION,
Claude Delage, John J. Shane, and Frank B. Johnson. 30 Jan 73, 4p
Availability: Pub. in the Archives of Dermatology, v108 p104-107 Jul 73.

Descriptors: (*Mammary glands, *Silicon), (*Plastic surgery, Mammary glands), Tissues(Biology), Pathology, Histology.
Identifiers: Granuloma.

Two and one-half years after having had silicone fluid injected into her breasts, a 22-year-old woman noticed two painful masses in the subcutaneous tissue of her abdominal wall. Similar lesions appeared four months later in both breasts and in the inguinal region. Gross and microscopic aspects of these masses were identical in all three anatomic sites. Cystic fluid was identified by infrared spectrophotometry as an all-methyl silicone polymer. The presence of silicone fluid in the abdominal wall and inguinal region is explained by gravitational migration from its initial site of injection in the breasts--a finding not previously reported, to our knowledge. (Author)

AD-768 301/4GA PC$2.75/MF$1.45
Naval Graduate Dental School Bethesda Md
ABSTRACTS OF RESEARCH PROJECT REPORTS BY NAVAL GRADUATE DENTAL SCHOOL GRADUATE OFFICERS, JUNE 1973,
W. B. Shreve, G. B. Pelleu, Jr., and R. W. Gaugler. 1 Jul 73, 16p Rept no. NGDS-TR-023

Descriptors: (*Dentistry, *Naval training), (*Medical research, *Reports), Abstracts, Silver alloys, Vapors, Electron microscopy, Materials, Physiology, Coatings, Removal, Epinephrine, Zinc alloys, Protection, Fluorides.
Identifiers: Operating rooms, Bar clasps, Lingual plates.

The abstracts provide a synopsis of research projects conducted by dental officers enrolled in the first-year graduate courses at the Naval Graduate Dental School, Bethesda, Maryland, during the academic year 1972-1973. The projects were completed in partial fulfillment of the requirements of the graduate courses. (Author)

BNL-17883/GA PC$3.25/MF$1.45
Brookhaven National Lab., Upton, N. Y.
MEDICAL AUTORADIOGRAPHY WITH STABLE ISOTOPE THYMIDINE: THEORY AND PRELIMINARY EXPERIMENTS.
D. N. Slatkin, K. W. Jones, F. H. Geisler, A. P. Wolf, and J. S. Fowler. 1973, 21p CONF-730525-3

Descriptors: (*Autoradiography, *Stable isotopes), (*Thymidine, Autoradiography), Biosynthesis, Diagnostic techniques, Dna, Labelled compounds.

For abstract, see NSA 28 06, number 15126.

COM-73-11583/4GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
IMMUNOLOGY. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1970-Sep 73,
Pernell Crockett. Oct 73, 132p* NTIS-WIN-73-040 Supersedes NTIS-PK-81.

Descriptors: (*Immunology, *Bibliographies), Immunologic diseases, Allergic diseases, Antibody formation, Immunization, Vaccines, Surgery, Cancer, Serology.

The NTISearch bibliography contains 127 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. Abstracts are presented dealing with medical research in immunology. They include studies on immunologic diseases, allergic diseases, antibody formation, immunization, vaccines, serology, surgical transplantation, cancer research, and immunochemistry. (Author)

COM-73-11584/2GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
SICKLE CELL ANEMIA. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-May 73,
Elizabeth A. Harrison. Aug 73, 34p* NTIS-WIN-73-041
Supersedes NTIS-PK-3, NTIS-PK-30.

Descriptors: (*Sickle cell anemia, *Bibliographies), Hereditary diseases, Diagnosis, Therapy, Blood diseases.

The NTISearch bibliography contains 29 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts cover the clinical and diagnostic aspects of sickle cell anemia. (Author)

CONF-720986-1/GA PC$3.75/MF$1.45
Mount Sinai Medical Center, Milwaukee, Wis. (Usa). Winter Research Lab.
PLANNING COOPERATION IN HUMAN BONE MARROW TRANSPLANT RESEARCH.
C. C. Congdon, M. M. Bortin, and W. M. Morris. 1972, 32p
Contract AT(49-7)-3111

Descriptors: (*Bone marrow, *Transplants), Data acquisition, Immune reactions, Information, Patients, Research programs.

For abstract, see NSA 28 05, number 12535.

COO-3399-1/GA PC$3.00/MF$1.45
Pennsylvania Univ., Philadelphia. Dept. Of Radiology.
NEW APPROACHES TO IMAGE FORMATION IN RADIOISOTOPE SCANNING. PROGRESS REPORT, AUGUST 1, 1972--APRIL 27, 1973.
D. E. Kuhl. 1973, 10p
Contract AT(11-1)-3399

Descriptors: (*Radioisotope scanning, *Research programs), Blood circulation, Brain, Diagnostic techniques, Diseases, Nuclear medicine, Patients, Physiology, Tracer techniques.

For abstract, see NSA 28 04, number 10562.

LA-UR-73-526/GA PC$3.25/MF$1.45
Los Alamos Scientific Lab., N. Mex.
TUMOR CELL IDENTIFICATION AND SEPARATION USING HIGH-SPEED MULTIPARAMETER CELL-SENSING TECHNIQUES.
P. F. Mullaney, J. A. Steinkamp, M. R. Raju, and P. K. Horan. 22p CONF-730437-1
Contract W-7405-eng-36

Descriptors: (*Tumor cells, *Biological radiation effects), (*Animal cells, *Separation processes), (*Dna, Biological radiation effects), Biological repair, Cell cycle, Cytology, Dyes, Fluoroscopy, Image intensifiers, In vitro, Laser radiation, Microscopy, Molecular structure, Optical systems, Sarcomas, Stains, Tissues, Ultrastructural changes, X radiation.

For abstract, see NSA 28 06, number 13012.

LA-UR-73-899/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y. Los Alamos Scientific Lab., N. Mex. New Mexico Univ., Albuquerque.
EVALUATION OF DIABETES BY OXIDATION OF EXP 14 C- OR EXP 13 C-LABELED GLUCOSE TO CO SUB 2 IN VIVO.
W. W. Shreeve, J. D. Shoop, R. P. Eaton, C. H. Wu, and M. S. Roginsky. 1973, 17p CONF-730309-9, SM-171/45

Descriptors: (*Diabetes mellitus, *Diagnostic techniques), Carbon 13, Carbon 14, Glucose, Ingestion, Labelled compounds, Lactic acid, Metabolism, Patients, Pyruvic acid, Salts.

For abstract, see NSA 28 06, number 15147.

LBL-2001/GA PC$13.25/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
CYTOGENETICS AND FANCONI'S ANEMIA: EXPERIMENTAL AND OTHER STUDIES OF A FAMILY.
W. D. Loughman. May 73, 221p
Contract W-7405-eng-48

Descriptors: (*Anemias, *Genetics), (*Lymphocytes, Chromosomal aberrations), (*Chromosomal aberrations, *Radioinduction), Biological repair, Cell cultures, Cell cycle, Chromosome breakage, Irradiation, Man, Progeny, X radiation.

For abstract, see NSA 28 05, number 10990.

LF-tr-60/GA PC$3.00/MF$1.45
EXPERIMENTAL RESEARCH ON THE TREATMENT OF CONTAMINATION BY THE TRANSPLUTONIANS.
J. Lafuma, J. C. Nenot, and M. Morin. 1970, 7p
Translated by R. Ruffy (Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex.) from pp 249-257 of EUR--4612.

Descriptors: (*Urinary tract, *Radionuclide kinetics), (*Curium 242, *Retention), (*Americium 241, Retention), (*Plutonium 238, Retention), Blood, Bone tissues, Breath, Dtpa, Excretion, Feces, Inhalation, Intramuscular injection, Liver, Lungs, Muscles, Plutonium 239, Radionuclide administration, Rats, Response modifying factors, Skeleton, Therapy.

For abstract, see NSA 28 05, number 11096.

N73-29044/7GA PC$3.00/MF$1.45
Techtran Corp., Silver Spring, Md.
THE INCIDENCE OF ABNORMAL LIVER FUNCTION TESTS IN DRUG ADDICTS WITHOUT A HISTORY OF JAUNDICE.
A. Weizel, P. Linhart, B. Kommerell, and K. Heilmann. Aug 73, 10p NASA-TT-F-15041
Contract NASW-2485
Tran-Transl. Into English from Deut. Med. Wochschr. (Stuttgart), V. 98, No. 20, 18 May 1973 p 1022-1025.

Descriptors: *Liver, *Narcotics, Antigens, Diseases, Pathology.

For abstract, see STAR 1120

N73-29045/4GA PC$3.00/MF$1.45
Scripta Technica, Inc., Washington, D.C.
NEW DATA IN THE USE OF THERAPEUTIC EXERCISE IN DISEASES OF THE PERIPHERAL VESSELS.
V. N. Moshkov, and A. I. Zhuravleva. Aug 73, 11p NASA-TT-F-15043
Contract NASW-2484
Tran-Transl. Into English from "Novyye Dannyye V Primenenii Lechebnoy Fizkultury Pri Zabolevaniyakh Perifericheskikh Sosudov" p 18-22.

Descriptors: *Clinical medicine, *Disorders, *Physical exercise, *Therapy, *Vascular system, Arteries, Lesions, Veins.

For abstract, see STAR 1120

ORO-2401-73/GA PC$6.50/MF$1.45
Vanderbilt Univ., Nashville, Tenn. Dept. Of Radiology.
RADIOISOTOPE STUDIES UTILIZING A LOW LEVEL WHOLE-BODY COUNTER AND CLINICAL APPLICATIONS OF ACTIVATION ANALYSIS. COMPREHENSIVE REPORT, 1957--1973.
A. B. Brill. 30 Apr 73, 87p
Contract AT(40-1)-2401

Descriptors: (*Radioisotope scanning, *Data processing), (*Patients, *Radiation doses), Nuclear medicine, Adrenal glands, Bismuth 203, Blood, Bone tissues, Brain, Calcium 47, Cerebrospinal fluid, Diagnostic techniques, Feces, Flow rate, Indium 111, Internal irradiation, Iodine 131, Labelled compounds, Neoplasms, Osteoporosis, Radiation dose distributions, Radiometric analysis, Radionuclide administration, Radionuclide kinetics, Retention, Sampling, Skeletal diseases, Technetium 99, Urine, Computer calculations, Data acquisition systems, Data display systems, Energy spectra, Photons, Scattering lengths, Tracer techniques, Cesium 137, Fallout, Man, Tennessee, Activation analysis, Biological materials, Californium 252, Neutron sources.

For abstract, see NSA 28 05, number 11076.

ORO-4057-3/GA PC$4.00/MF$1.45
North Carolina Univ., Chapel Hill. Dept. Of Pathology.
DETERMINATION OF THE CELLULAR AND SUBCELLULAR LOCALIZATION OF EXP 125 I- AND RADIOACTIVELY LABELED THYROID HORMONE IN THE THYROID, PITUITARY, AND HYPOTHALAMUS. TECHNICAL PROGRESS REPORT, OCTOBER 1, 1972--JUNE 30, 1973.
W. E. Stumpf. 1973, 39p
Contract AT(40-1)-4057

Descriptors: (*Triiodothyronine, *Tissue distribution), (*Thyroxine, Tissue distribution), Autoradiography, Brain, Hypothalamus, Iodine 125, Pituitary gland, Rats, Tracer techniques.

For abstract, see NSA 28 06, number 15156.

PB-223 918/4GA PC$3.00/MF$1.45
Washington Univ., St. Louis, Mo. School of Medicine.
ALPHA-1 ANTITRYPSIN DEFICIENCY AND CHRONIC RESPIRATORY DISEASE.
Annual rept. 15 Jun 71-14 Jun 72,
John A. Pierce. Jun 72, 26p NIH/NHLI-71-2218-A72
Contract PHS-71-2218

Descriptors: (*Trypsin, Antibodies), (*Deficiency diseases, Trypsin), (*Respiratory diseases, Trypsin), (*Genetics, Trypsin), Epidemiology, Immunology, Electrophoresis, Blood donors, Blood analysis.
Identifiers: *Trypsin inhibitors, *Alpha 1 antitrypsin.

The report discusses the genetic composition of a St. Louis population with respect to antitrypsin phenotypes. Blood samples were collected from hospital blood donors. Starch gel electrophoresis, rocket immunoelectrophoretic assay and crossed immunoelectrophoresis were used to analyze the blood samples. Several large families with unusual antitrypsin phenotypes were studied.

PB-223 938/2GA PC$7.00/MF$1.45
California Assembly General Research Committee, Sacramento. Assembly Science and Technology Advisory Council.
HEALTH CARE POLICY FOR CALIFORNIA. REPORT OF THE PANEL ON HEALTH CARE DELIVERY SYSTEMS TO THE ASSEMBLY SCIENCE AND TECHNOLOGY ADVISORY COUNCIL.
Final rept. Oct 70-Jan 72,
Leonard J. Duhl, Charles Lewis, Leon Hyman, M. A. Rockwell, and L. H. Andrus. Jan 72, 306p*
Grant NSF-GT-6

Descriptors: (*Medical services, California), Health, Policies, Financing, Manpower, Projects, Legislation, State government.
Identifiers: *Health delivery systems, Ambulatory health care, Community mental health centers, Neighborhood health centers.

The report focuses upon the delivery of medical care--the diagnosis and treatment of physical and mental disfunction. It presents recommendations in those policy areas in which a measure of consensus was reached: Organizing health care policy; financing health care services; health care delivery; health manpower. The following papers submitted to the Panel in the course of its deliberations are included in the report: Health Care for California; State Legislative Action for Promoting Systemic Change in Health Care Delivery; Financing Health Care; Program for Health Care in the 1970's; and Health Manpower Policy. Portions of this document are not fully legible.

PB-224 078/6GA PC$2.75/MF$1.45
State Univ. of New York, Brooklyn. Dept. of Medicine.
EFFICACY OF OXIDIZED STARCH AS AN INTESTINAL ADSORBENT.
Annual progress rept. 1 Jul 72-30 Jun 73,
Eli A. Friedman. 23 Jul 73, 22p* AK-1-73-2201
Contract PHS-73-2201

Descriptors: (*Adsorbents, Uremia), (*Starches, Adsorbents), (*Uremia, *Nitrogen), (*Intestines, Adsorbents), Blood chemistry, Oxidation, Urologic diseases, Experimental data, Protein metabolism, Artificial kidneys.
Identifiers: *Oxystarch.

Oxystarch, an oxidized derivative of soluble starch, was administered to seven patients with marginal renal function to assess its potential to bind nitrogenous wastes in the gut. All of the patients tolerated 28g of oxystarch daily with no change in serum electrolytes, hemogram, glucose tolerance, serum creatinine or plasma amino acids. Blood urea nitrogen levels fell significantly (from a control mean of 93.1 mg% to 62.1 mg%) during oxystarch treatment. In a controlled comparison of starch and oxystarch total body nitrogen balance studies showed an increase in fecal nitrogen (from a control of 1.4 g/24 hrs. to 2.5 g/24 hrs.) during oxystarch treatment associated with a fall in urinary nitrogen content from 7.6 g/24 hrs. to 5.5 g/24 hrs. Preliminary study of two patients on a ten g protein diet indicates that oxystarch increases fecal nitrogen by binding nitrogen containing metabolities.

PB-224 125/5GA PC$3.00/MF$1.45
Cedars-Sinai Medical Center, Los Angeles, Calif.
OSTEODYSTROPHY AND DIVALENT IONS IN KIDNEY FAILURE.
Annual progress rept. 1 Aug 72-31 Jul 73,
Shaul G. Massry, and Jack W. Coburn. 9 Aug 73, 33p AK-6-68-1040
Contract PH-43-68-1040

Descriptors: (*Uremia, *Muscoskeletal system), (*Parathyroid hormone, Muscoskeletal system), (*Calcium, Uremia), Absorption(Biological), Pathology, Physiology, Intestines, Ions, Nutrition, Vitamin D, Steroids, Drug therapy.
Identifiers: *Renal osteodystrophy, Cholecalciferol/dihydroxy.

Data on intestinal absorption of calcium in uremia, biologic action of 1,25(OH)2D3 in uremic and normal subjects, and on the effect of treatment with 1,25(OH)2D3 on the apparent skeletal resistance to parathyroid hormone are included. Intestinal absorption is defective in uremia and the defect in transport is probably located on the proximal part of the small intestine and this abnormality not only involves carrier mediated transport system but also affects absorption by diffusion. 1,25(OH)2D3 given in doses of .027 to 2.7 micrograms/day for 7-16 days to normal and uremic subjects. In normals, calcium absorption and urinary calcium increased after .14-2.7 micrograms/day; .68 to 2.7 micrograms/day were required to augment calcium absorption in uremic patients. Fecal calcium fell significantly. Preliminary results suggest that treatment with 1,25(OH)2D3 may correct the apparent skeletal resistance to parathyroid hormone.

PB-224 271/7GA PC$3.00/MF$1.45
North Carolina Univ., Chapel Hill. Mecklenburg Criminal Justice Pilot Project.
ATTITUDES CONCERNING THE RELATIVE SERIOUSNESS OF ABUSING DIFFERENT DRUGS: RESULTS OF PENNY-STACKING EXERCISE,
Ronald A. Boykin. 30 May 73, 13p MCJPP-63
Grant LEAA-73-NI-04-0002

Descriptors: (*Drug addiction, *Opinions), (*Attitudes, Statistical data), (*Drugs, Ranking), Ethyl alcohol, Opium alkaloids, Barbiturates, Amphetamines, Hallucinogenic drugs, Weighting functions, Surveys, North Carolina.
Identifiers: Drug abuse, *Penny stacking method, Polydrugs, Inhalants, Marijuana.

An opinion poll was taken of members of the Charlotte Community Drug Action Committee on the relative seriousness of eight forms of drug abuse, from alcohol to marijuana. In addition to the results of the survey, an appendix explains the rating method of study--penny stacking. Each person was given 100 pennies which were used to indicate the weight he would assign to each drug. Pennies were used to decrease the probability that a person will round off percentages to the nearest five or ten when writing. The method also allowed each person to make a graphical image of his opinion.

SLA-73-51/GA PC$4.75/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
STUDIES ON DERMESTID BEETLE: MATERIALS INTERACTIONS. I. MATERIALS PREFERENCES.
J. P. Brannen, A. L. Gennaro, T. J. Salb, B. J. Aday, and C. D. Woolfold. Apr 73, 52p

Descriptors: (*Beetles, *Packaging), Adults, Distribution, Economics, Eggs, Larvae, Life cycle, Nylon, Polyesters, Polyethylenes, Polypropylene, Polyurethanes, Teflon.

For abstract, see NSA 28 05, number 12580.

TID-26346/GA PC$6.25/MF$1.45
Tennessee Univ., Knoxville.
IMMUNOSUPPRESSION AND CARCINOGENESIS IN THE SYRIAN HAMSTER DURING TOPICAL APPLICATION OF 7,12-DIMETHYLBENZ(A)ANTHRACENE (DMBA).
A. K. Szakal. Aug 72, 81p

Descriptors: (*Hamsters, *Carcinogenesis), Benzanthracene, Hematopoietic system, Immune reactions, Immunosuppression, Lymph nodes, Methyl radicals, Neoplasms, Spleen.

For abstract, see NSA 28 05, number 12588.

UCRL-73456(Rev.2)/GA PC$3.50/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
CANCER RADIOCHEMOTHERAPY WITH 7-TRITIOTETRACYCLINE. I. RATIONALE AND PRELIMINARY ANIMAL RESULTS.
P. Wood, J. Haury, R. Davis, and L. Wood. 30 Aug 71, 26p CONF-710809-20

Descriptors: (*Neoplasms, *Radiotherapy), Autoradiography, Efficiency, Fluorescence, Labelled compounds, Rats, Rbe, Retention, Tetracyclines, Tissues, Tritium, Tritium compounds.

For abstract, see NSA 28 05, number 12592.

UCRL-74742/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
OZONE TAGGING FOR BIOMEDICAL PURPOSES.
P. Meyer. 4 May 73, 4p CONF-730301-8

Descriptors: (*Oxygen 15, *Radiochemistry), (*Ozone, *Labelling), Distribution, Positron cameras, Respiratory system, Tissue distribution, Tracer techniques.

For abstract, see NSA 28 05, number 11109.

6F. Environmental Biology

AD-768 294/1GA PC$2.75/MF$1.45
Defence Research Establishment Ottawa (Ontario)
REPELLENT-TREATED COLLARS AND WRIST BANDS FOR PERSONAL PROTECTION AGAINST BITING FLIES.
Technical note,
John M. McAndless. 27 Sep 73, 23p Rept no. DREO-TN-73-16

Descriptors: (*Insect repellents, *Diptera), Insect control, Effectiveness, Humans, Canada.
Identifiers: *Insect repellent treated collars.

A small field trail was carried out to evaluate the effectiveness of repellent-treated collars and wrist bands against biting flies. The repellent-treated items proved useful in reducing the number of insect landings but did not offer as much protection as liquid repellent applied directly to exposed skin. (Author)

BMI-171-149/GA PC$3.00/MF$1.45
Smithsonian Institution, Edgewater, MD. (Usa). Chesapeake Bay Center for Field Biology.
AMCHITKA BIOENVIRONMENTAL PROGRAM. STUDIES OF THE AVIFAUNA ON AMCHITKA ISLAND, ALASKA. ANNUAL PROGRESS REPORT, JULY 1, 1971--JUNE 30, 1972.
F. S. L. Williamson, C. M. White, and W. B. Emison. Apr 73, 22p
Contract AT(26-1)-171

Descriptors: (*Amchitka island area, *Terrestrial ecosystems), (*Milrow event, *Biological effects), (*Cannikin event, Biological effects), Birds, Populations.

For abstract, see NSA 28 06, number 12873.

BNWL-SA-4613/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
PRELIMINARY STUDIES ON THE RESISTANCE OF THE CRAYFISH, PACIFASTICUS LENIUSCULUS, TO ACUTE THERMAL SHOCK.
C. D. Becker, and R. G. Genoway. 1972, 10p CONF-730505-4
Contract AT(45-1)-1830

Descriptors: (*Thermal effluents, *Biological effects), (*Crustaceans, *Survival time), (*Thermal pollution, Biological effects), Aquatic ecosystems, Temperature dependence.

For abstract, see NSA 28 06, number 12880.

BNWL-SA-4704/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
COMPARISON OF THE LETHALITY OF VARIOUS COMBINATIONS OF HEAVY METALS AND WATER TEMPERATURE TO JUVENILE RAINBOW TROUT.
5p CONF-730505-6

Descriptors: (*Mercury, *Toxicity), (*Trout, *Animal growth), Medium temperature, Metals, Mortality, Synergism, Temperature dependence, Thermal pollution, Water pollution.

For abstract, see NSA 28 06, number 15127.

BNWL-SA-4709/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
EFFECTS OF ACUTE COLD SHOCK ON THE CHANNEL CATFISH, ICTALURUS PUNCTATUS.
R. M. Block. 1972, 15p CONF-730505-2

Descriptors: (*Thermal pollution, *Biological effects), (*Fishes, *Biological shock), Aquatic ecosystems, Body temperature, Daily variations, Environment, Mortality, Nervous system, Pathological changes, Physiology, Rivers, Seasonal variations, Temperature dependence, Waste heat.

For abstract, see NSA 28 04, number 08200.

BNWL-SA-4712/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
PRELIMINARY STUDIES ON THE EFFECT OF FATIGUE ON THERMAL TOLERANCE OF RAINBOW TROUT, SALMO GAIRDNERI.
M. J. Schneider, R. G. Genoway, and S. A. Barraclough. 1972, 13p CONF-730505-3

Descriptors: (*Thermal pollution, *Biological effects), (*Trout, *Biological shock), Aquatic ecosystems, Biochemical reaction kinetics, Blood, Body temperature, Daily variations, Environment, Glucose, Lactic acid, Pathological changes, Physical effort, Rivers, Sampling, Temperature dependence, Waste heat.

For abstract, see NSA 28 04, number 08201.

BNWL-1747/GA PC$7.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
GAMMA AND LOGNORMAL DISTRIBUTIONS AS MODELS IN STUDYING FOOD-CHAIN KINETICS.
L. L. Eberhardt, and R. O. Gilbert. May 73, 100p
Contract AT(45-1)-1830

Descriptors: (*Food chains, Pesticides), (*Pesticides, *Diffusion), (*Radioisotopes, Diffusion), Biological materials, Computer calculations, Computer codes, Data, Ecosystems, Gamma function, Kinetic equations, L codes, Mathematical models, Radionuclide migration, S codes, Sampling, Statistical mechanics, Statistics, Stochastic processes.

For abstract, see NSA 28 05, number 10876.

COM-73-11538/8GA Reprint
Wyoming Univ., Moran. Jackson Hole Biological Research Station.
BIOLOGICAL EFFECTS OF FLUCTUATING WATER LEVELS IN THE SNAKE RIVER, GRAND TETON NATIONAL PARK, WYOMING,
Richard L. Kroger. 21 Sep 72, 5p NOAA-73071716
Revision of report dated 3 Apr 72. Sponsored in part by National Park Service, Moran, Wyoming. Pub. in The American Midland Naturalist, v89 n2 p478-481 Apr 73.

Descriptors: (*Aquatic biology, Water supply), (*Ecology, Aquatic biology), Irrigation, Invertebrates, Algae, Fishes, Freshwater fishes, Aquatic animals, Snake River, Wyoming, Grand Teton National Park.
Identifiers: *Water level.

The effects of fluctuating water levels--which result from variation in the demand for irrigation water released through Jackson Lake Dam--on aquatic biota in the Snake River in Grand Teton National Park were observed. Unnaturally low water levels and sudden decreases in water flow exposed the stream bed and destroyed algae, invertebrates and some fish and probably limited the production of other fish occupying higher trophic levels. This is evidently the first published report which shows that rapid changes in water levels leave aquatic invertebrates and some fish stranded on the exposed stream bed. (Author)

COM-73-11630/3GA PC$5.00/MF$1.45
Alaska Dept. of Fish and Game, Juneau.
RELATIONSHIP BETWEEN LOGGING ACTIVITIES AND SALMON PRODUCTION.
Completion rept. Jul 70-Jun 72,
Alan P. Kingsbury. Apr 73, 59p NOAA-73090605
Grant NMFS-5-24-R

Descriptors: (*Lumbering, Animal reproduction), (*Salmon, *Alaska), Sediments, Streams, Oxygen, Dissolved gases.
Identifiers: Spawning, Logging.

Sediment content of spawning areas in 108 Creek increased over a six-year period as logging progressed in the watershed but did not change appreciably in the following three years as cutting shifted away from the main stream. Marked changes in sediment content of Kadashan Creek spawning areas also occurred although logging has not yet begun. The geological, hydrological and biological characteristics of the two streams differ widely. The effects of sediment content changes upon the production of pink salmon fry in the two streams can't be effectively separated from the effects or other environmental variables. An analysis of the relationship between fine sediment and intra-gravel oxygen in the two streams was inconclusive. (Author)

CONF-730704-2/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
COMPARISON OF MODELS OF AN OLD FIELD ARTHROPOD FOOD CHAIN.
J. B. Mankin, H. H. Shugart, and R. I. Van Hook. 1971, 15p

Descriptors: (*Food chains, *Biological models), Arthropods, Data, Ecosystems, Energy, Insects, Populations.

For abstract, see NSA 28 06, number 15130.

COO-2161-9/GA PC$4.50/MF$1.45
Wisconsin Univ., Madison (Usa). Dept. Of Bacteriology.
MICROBIOLOGY OF THERMALLY POLLUTED ENVIRONMENTS. TECHNICAL PROGRESS REPORT.
T. D. Brock. 1 Apr 73, 47p
Contract AT(11-1)-2161

Descriptors: (*Algae, *Genetic variability), (*Thermal pollution, *Biological effects), Aquatic ecosystems, Environment, Growth, Rivers, Time dependence, Water pollution, Wyoming.

For abstract, see NSA 28 04, number 08202.

COO-3254-13/GA PC$3.00/MF$1.45
City Coll., New York. Dept. Of Biology.
GROWTH OF SALT MARSH MICROCOSMS SUBJECTED TO THERMAL STRESS.
N. M. Saks, J. J. Lee, W. A. Muller, and J. H. Tietjen. 1973, 14p CONF-730505-5
Contract AT(11-1)-3254

Descriptors: (*Protozoa, *Thermal stresses), (*Nematodes, Thermal stresses), (*Algae, Thermal stresses), Biological shock, Growth.

For abstract, see NSA 28 06, number 15137.

COO-3380-9/GA PC$4.25/MF$1.45
New York Univ., N. Y. Inst. Of Environmental Medicine.
CONSIDERATIONS RELATING TO THE FORMULATION OF LIMITS FOR UNAVOIDABLE POPULATION EXPOSURES TO ENVIRONMENTAL CARCINOGENS.
R. E. Albert, and B. Altshuler. 12 Jul 72, 41p
CONF-720505-5

Descriptors: (*Bone tissues, *Biological radiation effects), (*Sarcomas, *Radioinduction), (*Man, *Survival time), (*Tobacco smokes, *Toxicity), Biological effects, Carcinogens, Mammals, Mathematical models, Chronic irradiation, Dose-response relationships, Internal irradiation, Intravenous injection, Mice, Radium 226, Aerosols, Age dependence, Combustion, Human populations, Nicotiana, Residues.

For abstract, see NSA 28 05, number 11082.

COO-3568-3/GA PC$3.75/MF$1.45
Woods Hole Oceanographic Institution, Mass.
PLUTONIUM CONCENTRATION ALONG FRESH WATER FOOD CHAINS OF THE GREAT LAKES, U. S. A. GENERAL SUMMARY OF PROGRESS, 1972--1973.
V. T. Bowen, and V. E. Noshkin. 1973, 35p
Contract AT(11-1)-3568

Descriptors: (*Plutonium 239, *Radioecological concentration), (*Plutonium 238, Radioecological concentration), (*Cesium 137, Radioecological concentration), (*Strontium 90, Radioecological concentration), Aquatic ecosystems, Fishes, Food chains, Lake ontario, Molluscs, Plankton, Radiation monitoring, Sediments, Water.

For abstract, see NSA 28 06, number 12857.

LA-5282-MS/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ECOLOGICAL INVESTIGATION OF RADIOACTIVE MATERIALS IN WASTE DISCHARGE AREAS AT LOS ALAMOS FOR THE PERIOD JULY 1, 1972--MARCH 31, 1973.
T. E. Hakonson, J. W. Nyhan, L. J. Johnson, and K. V. Bostick. May 73, 48p
Contract W-7405-eng-36

Descriptors: (*Los alamos scientific lab, *Environment), (*Biological dosemeters, *Insects), (*Trinity event, *Radiation monitoring), (*Cesium 137, Radiation monitoring), Americium 241, Animals, Atmospheric explosions, Barium 133, Cobalt 60, Contamination, Diffusion, Europium 152, Europium 155, Nuclear explosions, Plants, Plutonium 238, Plutonium 239, Radioactive waste disposal, Radionuclide kinetics, Radionuclide migration, Sampling, Soils, Strontium 90, Time dependence, Yttrium 90.

For abstract, see NSA 28 06, number 12868.

NYO-3995-22/GA PC$3.75/MF$1.45
City Coll., New York. Dept. Of Biology. Brookhaven National Lab., Upton, N. Y.
TAXONOMIC IDENTITY AND PHYSIOLOGICAL ECOLOGY OF CHLAMYDOMONAS HEDLEYI (THE ALGAL FLAGELLATE SYMBIONT FROM THE FORAMINIFER ARCHAIAS ANGULATUS).
J. J. Lee, L. J. Crockett, J. Hagan, and R. J. Stone. 1971, 31p
Contract AT(30-1)-3995

Descriptors: (*Chlamydomonas, *Physiology), Cell cycle, Metabolism, Morphological changes.

For abstract, see NSA 28 06, number 15151.

N73-29057/9GA PC$3.50/MF$1.45
National Research Council of Canada, Ottawa (Ontario).
THE DIRECT ENDANGERING OF THE LIVING SPACE (A PROPOSED SET OF QUANTITATIVE CONCEPTS).
S. P. Mauch, and T. Schneider. 1973, 29p NRC-TT-1636
Tran-Trans. Into English from Schweiz. Arch. (Switzerland), V. 37, No. 6, 1971 p 175-185.

Descriptors: *Environment protection, *Environmental control, *Habitability, *Problem solving, Confidence limits, Decision making, Environmental quality.

For abstract, see STAR 1120

ORNL-EIS-73-28/GA PC$11.50/MF$1.45
Oak Ridge National Lab., Tenn.
THERMAL EFFECTS ON AQUATIC ORGANISMS: ANNOTATED BIBLIOGRAPHY OF 1972 LITERATURE.
C. C. Coutant, and H. A. Pfuderer. Jun 73, 187p
Contract W-7405-eng-26

Descriptors: (*Thermal effluents, *Bibliographies), (*Aquatic ecosystems, Thermal pollution), (*Thermal pollution, Bibliographies), Animals, Biological effects, Plants, Waste heat.

For abstract, see NSA 28 05, number 10902.

ORO-3299-131/GA PC$3.00/MF$1.45
North Carolina Univ., Chapel Hill.
EFFECTS OF IONIZING RADIATION ON PLANT SPECIES, POPULATIONS AND ECOSYSTEMS. PROGRESS REPORT, SEPTEMBER 1, 1972--AUGUST 31, 1973.
J. F. McCormick. 7p
Contract AT(40-1)-3299

Descriptors: (*Pines, *Radiosensitivity), (*Ozone, *Radiosensitivity effects), (*Trees, Radiosensitivity), (*Plants, Radiosensitivity), Biological radiation effects, Ecosystems, Forests, Gamma radiation, Photon beams, Populations, Radiation doses, Radioecology, Response modifying factors, Seedlings.

For abstract, see NSA 28 05, number 11000.

ORO-4254-13/GA PC$5.00/MF$1.45
Oklahoma State Univ., Stillwater.
PHYTOPLANKTON COMMUNITY STRUCTURE AND NUTRIENT RELATIONSHIPS IN LAKE CARL BLACKWELL, OKLAHOMA.
A. R. Faust. Jul 73, 60p

Descriptors: (*Algae, *Plant growth), (*Plankton, Plant growth), Aquatic ecosystems, Communities, Lakes, Nutrients, Oklahoma.

For abstract, see NSA 28 05, number 12577.

ORO-4254-14/GA PC$4.25/MF$1.45
Oklahoma State Univ., Stillwater.
BIOGEOCHEMISTRY OF A RESERVOIR ECOSYSTEM. REPORT NO. 4, SEPTEMBER 1, 1972--JUNE 1, 1973.
L. P. Varga, D. W. Toetz, and T. C. Dorris. 1973, 41p
Contract AT(40-1)-4254

Descriptors: (*Aquatic ecosystems, *Biogeochemistry), Algae, Biological models, Chlorella, Nitrates, Nitrogen, Nitrogen 15, Phosphorus, Plankton, Tracer techniques, Uptake, Water reservoirs.

For abstract, see NSA 28 05, number 12578.

PB-223 911/9GA PC$3.00/MF$1.45
Washington State Univ., Pullman. Dept. of Wildlife Biology.
IMPACTS OF WATER-RESOURCE DEVELOPMENT IN THE SNAKE RIVER AREA ON WILDLIFE.
Rept. for 1 Jul 72-30 Jun 73,
Irven O. Buss, and W. H. Funk. 15 Jul 73, 49p
W73-14773, OWRR-A-054-WASH(2)
Contract DI-14-31-0001-3848

Descriptors: (*Reservoirs, *Ecology), (*Wildlife, *Environmental engineering), Dams, Impact, Birds, Invertebrates, Food supply, Vertebrates, Statistical distributions, Information systems, Trends, Washington(State), Predictions.
Identifiers: Waterfowl, Game animals, Land inundation, Habitats, Snake River canyon(Washington).

Four approaches were used to study the ecologic impact of drawdown and storage of water behind dams for flood control and power on wildlife population changes in the Snake River canyon, Southeast Washington. The first involved availability of aquatic macroinvertebrates as a potential food source for waterfowl. The second was to record changes in relative numbers and distribution of vertebrate animals as a result of flooding riparian habitat. The third involved seasonal trapping of small mammals along 21 transects. The fourth approach involved information on hunter-killed game animals collected in the study area during fall hunting seasons to supplement data obtained by counting animals on the 21 transects.

PB-224 055/4GA PC$3.50/MF$1.45
Alaska Univ., College. Inst. of Water Resources.
THE SIGNIFICANCE OF SELECTED PHYSICAL AND CHEMICAL VARIABLES IN BENTHIC MACROINVERTEBRATE DISTRIBUTION IN A SMALL SUBARCTIC STREAM.
Master's thesis,
Dennis Leon Ward. Apr 72, 71p W73-14865, OWRR-B-017-ALAS(2)

Descriptors: (*Benthos, Streams), (*Streams, *Water quality), (*Alaska, Insect control), Distribution (Property), Water pollution, Dissolved gases, Oxygen, Temperature measurement, Sampling, Water flow, Velocity, pH, Theses, Goldstream Creek.
Identifiers: Mayflies, Stoneflies, Caddisflies, Tricoptera.

The objective was to determine whether temperature, velocity, dissolved oxygen, or pH operate singly, synergistically, or additionally, to control or limit distribution of Ephemeroptera (mayflies)Plecoptera (stoneflies), and Trichoptera, (caddisflies), in Goldstream Creek. Ephemeroptera, Trichoptera and Plecoptera composed 90.8%, 9.1% and 0.1% of the total number of organisms collected during the sampling period. Only fourteen stoneflies were sampled and this proved to be too small a number from which to draw any conclusions. Trichopterans occurred in highest numbers in areas not heavily populated with Ephemeroptera. The station where the largest total number of caddisflies were collected had the highest water velocity and was the furthest downstream station. Normal downstream changes in water quality such as increased temperature, solids, color and turbidity, and decreased dissolved oxygen are also suspected to influence this separation of the mayflies and caddisflies. At the station with highest water velocity the caddisflies distributed themselves so that the numbers collected were inversely related to water velocity.

RLO-2225-T-14-5/GA PC$3.75/MF$1.45
Washington Univ., Seattle. Lab. Of Radiation Ecology.
STUDIES OF THE NATURAL ALPHA-EMITTING RADIOISOTOPES IN MARINE ORGANISMS. ANNUAL PROGRESS REPORT, 1972--1973.
W. R. Schell. 1 May 73, 31p
Contract AT(45-1)-2225

Descriptors: (*Lead 210, *Radiation monitoring), (*Polonium 210, Radiation monitoring), (*Water, Radiation monitoring), Alpha particles, Crustaceans, Environment, Gamma sources, Isotope dating, Lead, Monitoring, Oysters, Radiation doses, Radioecological concentration, Salmon, Sampling, Sediments, Semiconductor detectors.

For abstract, see NSA 28 06, number 12858.

TID-26343/GA PC$8.00/MF$1.45
Helsinki Univ. (Finland). Dept. Of Radiochemistry.
OCCURRENCE OF EXP 137 CS IN THE BIOSPHERE EVALUATED WITH ENVIRONMENTAL AND METABOLIC STUDIES.
E. Hasanen. May 72, 119p
Contract AT(30-1)-3446

Descriptors: (*Cesium 137, *Biological half-life), (*Food chains, *Radionuclide migration), (*Aquatic ecosystems, Radionuclide migration), (*Man, *Radionuclide kinetics), Deer, Diffusion, Fallout, Finland, Fishes, Lichens, Nuclear explosions, Radiation monitoring.

For abstract, see NSA 28 06, number 12870.

TID-26344/GA PC$12.75/MF$1.45
Tennessee Univ., Knoxville.
DYNAMICS OF LITTER DECOMPOSITION, MICROBIOTA POPULATIONS, AND NUTRIENT MOVEMENT FOLLOWING NITROGEN AND PHOSPHORUS ADDITIONS TO A DECIDUOUS FOREST STAND.
J. M. Kelly. Jun 73, 211p

Descriptors: (*Forests, *Nutrients), Decomposition, Fertilizers, Leaves, Nitrogen, Phosphorus, Residues, Soils, Terrestrial ecosystems, Trees.

For abstract, see NSA 28 05, number 12587.

TID-26347/GA PC$3.00/MF$1.45
Minnesota Univ., Minneapolis. Dept. Of Ecology and Behavioral Biology.
PROGRESS REPORT (1972--1973) ON AEC SUPPORTED RESEARCH ON ECOLOGICAL STUDIES ON THE DYNAMICS OF PLANKTONIC ALGAE WITH SPECIAL REFERENCE TO THEIR MICROSTRATIFICATION.
6p
Contract AT(11-1)-1820

Descriptors: (*Algae, *Plant growth), (*Plankton, Plant growth), Aquatic ecosystems, Communities, Lakes, Minnesota.

For abstract, see NSA 28 05, number 12589.

6G. Escape, Rescue, and Survival

N73-29053/8GA PC$3.25/MF$1.45
Techtran Corp., Silver Spring, Md.
MEDICAL ASPECTS OF THE SAFE DESCENT AND LANDING OF A SPACECRAFT ON THE EARTH AND OTHER CELESTIAL BODIES.
V. G. Volovich. Aug 73, 22p NASA-TT-F-15047
Contract NASW-2485
Tran-Transl. Into English from Osnovy Kosm. Biol. Med. (Moscow), V. 3, Pt. 4, Chapter 3, 1973 40 p.

Descriptors: *Crash landing, *Emergency life sustaining systems, *Survival, Desert adaptation, Ditching (Landing), Food, Polar regions, Water consumption.

For abstract, see STAR 1120

6H. Food

AD-768 109/1GA PC$6.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
AN ECONOMIC COMPARISON OF TWO HOSPITAL FOOD SERVICE FACILITIES,
Edward J. Rymut. Jul 72, 93p Rept no. USAMC-ITC-2-72-09

Descriptors: (*Hospitals, *Food dispensing), Cooking devices, Kitchen equipment + supplies, Frozen foods, Manpower, Training, Costs.

Contents: Centralized kitchen facility; Convenience food service facility; Equipment costs; Centralized kitchen workforce; Convenience food system workforce; Training requirements; Food costs.

COM-73-11565/1GA Reprint
National Marine Fisheries Service, Seattle, Wash. Pacific Fishery Products Technology Center.
SMOOTH, WHITE SPREAD FROM SEPARATED FISH FLESH FORMS A BASE FOR FLAVORED DIPS, SNACK ITEMS,
M. Patashnik, G. Kudo, and D. Miyauchi. 1973, 5p
NOAA-73082901

Descriptors: (*Fishes, *Food processing), Fish protein concentrates, Enzymes, Additives, Nutrition, Muscles.

Machine-separated fish flesh from under-utilized species offers a potentially ample supply of cost-competitive fish protein for the snack field. The process described produces a bland, unflavored spread base with smooth texture, appealing white color, and excellent stability. Textural smoothness and spreadability are attained by physical size reduction and controlled heat processing in the presence of an enzyme and other additives. White color results from light reflected from the surfaces of finely emulsified oil globules in the oil-protein-water emulsion formed during processing. Flavor of the bland fish substrate is enhanced by using food approved additives. The formulation permits diversification into dips or fried snack items with only slight modification of ingredients or processing. Wet comminuted fish muscle protein has excellent nutritional and functional properties. With the exception of Japanese-style fish cakes, it has been used little in fabricated foods largely because information was lacking on how to process this raw material into suitable forms. The processing technique described can broaden the uses for fish muscle.

COO-2038-4/GA PC$3.00/MF$1.45
Nebraska Univ., Lincoln. Dept. Of Food Science and Technology.
STUDY OF CONTROL OF PUBLIC HEALTH PROBLEMS USING IRRADIATION. FINAL REPORT.
R. B. Maxcy. 30 Apr 73, 9p
Contract AT(11-1)-2038

Descriptors: (*Meat, *Radiopreservation), Gamma radiation, Irradiation, Low dose irradiation, Microorganisms, Organoleptic properties, Quality control, Radiosterilization, Storage life, Wholesomeness.

For abstract, see NSA 28 06, number 13021.

See prices of individual reports/GA PC$3.50/$1.45
1973,
26 issues58p*Teratologic Evaluation of FDA Compounds.

Teratological test results are reported in four species of laboratory animals. Portions of these documents are not fully legible. For individual reports, see below:

FDABF-GRAS-127. FDA-71-48 (Syloid; Silica aerogel). 1 May 73, 58p, $3.50 **PB-223 808/7GA PB-223 808/7GA**
FDABF-GRAS-128. FDA-71-58 (dl-alpha Tocopherol acetate). 1 Jun 73, 58p, $3.50 **PB-223 809/5GA PB-223 809/5GA**
FDABF-GRAS-129. FDA-71-45 (Sodium Silicoaluminate). 1 May 73, 58p, $3.50 **PB-223 810/3GA PB-223 810/3GA**
FDABF-GRAS-130. FDA-71-30 (Oil of Clove). 1 Jun 73, 57p, $3.50 **PB-223 811/1GA PB-223 811/1GA**
FDABF-GRAS-131. FDA-71-26 (Oil of Mustard). 1 Jun 73, 58p, $3.50 **PB-223 812/9GA PB-223 812/9GA**
FDABF-GRAS 132. FDA-71-71 (Manganese Sulfate, Monohydrate). 16 May 73, 59p, $3.50 **PB-223 813/7GA PB-223 813/7GA**
FDABF-GRAS-133. FDA-71-54 (Citric Acid). 16 May 73, 59p PC$3.50 **PB-223 814/5GA PB-223 814/5GA**
FDABF-GRAS-134. FDA-71-57 (Menthol Natural, Brazilian). 1 Jun 73, 57p, $3.50 **PB-223 815/2GA PB-223 815/2GA**
FDABF-GRAS-135. FDA-71-39 (Propyl Gallate). 2 Jul 73, 16p, $2.75 **PB-223 816/0GA PB-223 816/0GA**
FDABF-GRAS-136. FDA-71-38 (Methyl paraben). 2 Jul 73, 16p, $2.75 **PB-223 817/8GA PB-223 817/8GA**
FDABF-GRAS-137. FDA-71-17 (Sterculia (Karaya) Gum). 2 Jul 73, 16p PC$2.75 **PB-223 818/6GA PB-223 818/6GA**
FDABF-GRAS-138. FDA-71-16 (Guar Gum). 2 Jul 73, 14p, $2.75 **PB-223 819/4GA PB-223 819/4GA**
FDABF-GRAS-139. FDA-71-53 (Agar-agar). 31 Jul 73, 60p, $3.50 **PB-223 820/2GA PB-223 820/2GA**
FDABF-GRAS-140. FDA-71-55 (Tartaric acid). 31 Jul 73, 58p, PC$3.50 **PB-223 821/0GA PB-223 821/0GA**
FDABF-GRAS-141. FDA-71-56 (Propylene glycol). 31 Jul 73, 57p PC$3.50 **PB-223 822/8GA PB-223 822/8GA**
FDABF-GRAS-142. FDA-71-51 (Methocel). 31 Jul 73, 61p, $3.50 **PB-223 823/6GA PB-223 823/6GA**
FDABF-GRAS-143. FDA-71-40 (Dilauryl thiodipropionic acid). 31 Jul 73, 16p, PC$2.75 **PB-223 824/4GA PB-223 824/4GA**
FDABF-GRAS-144. FDA-71-47 (Lactose). 19 Jul 73, 15p $2.75 **PB-223 825/1GA PB-223 825/1GA**
FDABF-GRAS-145. FDA-71-46 (Sodium tripolyphosphate, anhydrous). 19 Jul 73, 15p, PC$2.75 **PB-223 826/9GA PB-223 826/9GA**
FDABF-GRAS-146. FDA-71-44 (Caffeine). 31 Jul 73, 17p, PC$2.75 **PB-223 827/7GA PB-223 827/7GA**
FDABF-GRAS-147. FDA-71-43 (Talc). 31 Jul 73, 16p, PC$2.75 **PB-223 828/5GA PB-223 828/5GA**
FDABF-GRAS-148. FDA-71-41 (Hydrated Calcium Silicate). 31 Jul 73, 17p, PC$2.75 **PB-223 829/3GA PB-223 829/3GA**
FDABF-GRAS-149. FDA-71-72 (Glucono delta lactone). 13 Aug 73, 58p, PC$3.50 **PB-223 830/1GA PB-223 830/1GA**
FDABF-GRAS-150. FDA-71-61 (Sodium acid Pyrophosphate). 13 Aug 73, 58p, PC$3.50 **PB-223 831/9GA PB-223 831/9GA**
FDABF-GRAS-151. FDA-71-74 (Sodium aluminum Sulfate). 20 Aug 73, 43p, PC$3.00 **PB-223 832/7GA PB-223 832/7GA**
FDABF-GRAS-152. FDA-71-73 (Starter Distillate, Hansen). 20 Aug 73, 43p, PC$3.00 **PB-223 833/5GA PB-223 833/5GA**

See prices of individual reports/GRC$2.75/MF$1.45
1972-73,
7 issues15p*Evaluation of the Health Aspects of FDA C
Report of Select Committee on GRAS Substances.

The reports provide independent evaluation on the safety of gum tragacanth and six other food additives at their present levels of use. Discussed are daily food consumption, nutritive value, and toxicology of these food ingredients. For individual reports, see below:

FDABF-GRAS-153, SCOGS-4. Gum Tragacanth. Dec 72, 15p, PC$2.75 **PB-223 835/0GA PB-223 835/0GA**
FDABF-GRAS-154, SCOGS-13. Guar Gum. Feb 73, 16p, PC$2.75 **PB-223 836/8GA PB-223 836/8GA**
FDABF-GRAS-155, SCOGS-7. Benzoic Acid and Sodium Benzoate. Jan 73, 17p, PC$2.75 **PB-223 837/6GA PB-223 837/6GA**
FDABF-GRAS-156, SCOGS-17. Garlic and Oil of Garlic. Feb 73, 18p, PC$2.75 **PB-223 838/4GA PB-223 838/4GA**
FDABF-GRAS-157, SCOGS-14. Oil of Rue. Feb 73, 15p, PC$2.75 **PB-223 839/2GA PB-223 839/2GA**
FDABF-GRAS-158, SCOGS-11. Propyl Gallate. Jan 73, 18p, PC$2.75 **PB-223 840/0GA PB-223 840/0GA**
FDABF-GRAS-159, SCOGS-12. Gum Ghatti. Feb 73, 12p, PC$2.75 **PB-223 841/8GA PB-223 841/8GA**

PB-223 843/4GA PC$4.50/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - CALCIUM SEQUESTRANTS.
Final rept. 1920-73.
May 73, 146p* TR-72-1552-23 FDABF-GRAS-160
Contract FDA-72-104

Descriptors: (*Calcium organic compounds, *Food additives), Chelating agents, Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients, *Calcium sequestrants.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of calcium sequestrants as food ingredients. Chemical information, biological data, and biochemical aspects of calcium sequestrants are given in a 144 page summary containing 1050 references.

PB-223 844/2GA PC$4.25/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - CHOLIC ACID AND DERIVATIVES.
Final rept. 1920-73.
Apr 73, 110p* TR-72-1552-22 FDABF-GRAS-161
Contract FDA-72-104

Descriptors: (*Food additives, Toxicology), Cholesterol, Chemistry, Biochemistry, Reviews, Bibliographies.
Identifiers: *Cholic acid, *GRAS food ingredients, Generally recognized as safe food ingredients, *Bile acids.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of cholic acid and derivatives. Food ingredients, chemical information, biological data and biochemical aspects of cholic acid and derivatives are given in a 108 page summary containing 919 references.

PB-223 845/9GA PC$3.00/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - CHOLINE SALTS.
Final rept. 1920-73.
May 73, 30p* TR-72-1552-24 FDABF-GRAS-162
Contract FDA-72-104

Descriptors: (*Cholines, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of choline salts as food ingredients. Chemical information, biological data, and biochemical aspects of choline salts are given in a 28 page summary containing 100 references.

PB-223 846/7GA PC$3.00/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - ALGAE.
Final rept. 1920-73.
May 73, 29p* TR-1552-25 FDABF-GRAS-163
Contract FDA-72-104

Descriptors: (*Algae, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of algae as a food ingredient. Chemical information, biological data, and biochemical aspects of algae are given in a 27 page summary containing 193 references.

PB-223 847/5GA PC$2.75/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - ACONITIC ACID.
Final rept. 1920-73.
May 73, 24p* TR-72-1552-27 FDABF-GRAS-164
Contract FDA-72-104

Descriptors: (*Organic acids, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *Aconitic acid, *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of aconitic acid as a food ingredient. Chemical information, biological data, and biochemical aspects of aconitic acid are given in a 23 page summary containing 79 references.

PB-223 848/3GA PC$2.75/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - PULPS.
Final rept. 1920-73.
May 73, 15p* TR-72-1552-28 FDABF-GRAS-165
Contract FDA-72-104

Descriptors: (*Pulps, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of pulps as food ingredients. Chemical information, biological data, and biochemical aspects of pulps are given in a 13 page summary containing 50 references.

PB-223 849/1GA PC$3.75/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - IODINE AND IODINE SALTS.
Final rept. 1920-73.
May 73, 84p* TR-72-1552-26 FDABF-GRAS-166
Contract FDA-72-104

Descriptors: (*Iodine, *Food additives), Iodine inorganic compounds, Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of iodine and iodine salts, as food ingredients. Chemical information, biological data, and biochemical aspects of iodine and iodine salts are given in a 82 page summary containing 414 references.

PB-223 850/9GA PC$4.25/MF$1.45
Food and Drug Research Labs., Inc., Maspeth, N.Y.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - CITRATES.
Final rept. 1920-73.
Apr 73, 105p* FDABF-GRAS-167

Descriptors: (*Citrates, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of citrates as food ingredients. Chemical information, biological data, and biochemical aspects of citrates are given in a 100 page summary containing 594 references.

PB-223 851/7GA PC$2.75/MF$1.45
Food and Drug Research Labs., Inc., Maspeth, N.Y.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - CALCIUM HYDROXIDE AND CALCIUM OXIDE.
Final rept. 1920-73.
May 73, 24p* FDABF-GRAS-168

Descriptors: (*Calcium hydroxides, *Food additives), (*Calcium oxides, Food additives), Calcium inorganic compounds, Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of calcium hydroxide and calcium oxide as food ingredients. Chemical information, biological data, and biochemical aspects of calcium hydroxide and calcium oxide are given in a 22 page summary containing 108 references.

PB-223 852/5GA PC$2.75/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - SORBOSE.
Final rept. 1920-73.
Jun 73, 17p* TR-72-1552-30 FDABF-GRAS-169
Contract FDA-72-104

Descriptors: (*Sorbose, *Food additives), Toxicology, Chemistry, Biochemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of sorbose as a food ingredient. Chemical information, biological data, and biochemical aspects of sorbose are given in a 15 page summary containing 96 references.

PB-223 853/3GA PC$8.00/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - CORN SUGAR.
Final rept. 1920-73.
Jun 73, 395p* TR-72-1552-29 FDABF-GRAS-170
Contract FDA-72-104

Descriptors: (*Glucose, *Food additives), Toxicology, Nutrition, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients, *Corn sugar.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of corn sugar as a food ingredient. Chemical information, biological data, and biochemical aspects of corn sugar are given in a 392 page summary containing 4925 references.

PB-223 854/1GA PC$3.00/MF$1.45
Franklin Inst. Research Labs., Philadelphia, Pa.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - BEESWAX AND JAPAN WAX.
Final rept. 1920-73.
May 73, 33p* FIRL-80G-C3378-01 FDABF-GRAS-171

Descriptors: (*Beeswax, *Food additives), (*Waxes, Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients, *Japan wax.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of beeswax and Japan wax as food ingredients. Chemical information, biological data, and biochemical aspects of beeswax and Japan wax are given in a 31 page summary containing 129 references.

PB-223 855/8GA PC$2.75/MF$1.45
Franklin Inst. Research Labs., Philadelphia, Pa.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - CARNAUBA WAX.
Final rept. 1920-73.
May 73, 15p* FIRL-80G-C3378-01 FDABF-GRAS-172
Contract FDA-72-101

Descriptors: (*Carnauba wax, *Food additives), Biochemistry, Chemistry, Toxicology, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of Carnauba wax as a food ingredient. Chemical information, biological data, and biochemical aspects of Carnauba wax are given in a 12 page summary containing 31 references.

PB-223 856/6GA PC$3.50/MF$1.45
Franklin Inst. Research Labs., Philadelphia, Pa.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS--SODIUM THIOSULFATE.
Final rept. 1920-73.
Jun 73, 67p* FIRL-80G-C3378-01 FDABF-GRAS-173
Contract FDA-72-101

Descriptors: (*Sodium thiosulfates, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of sodium thiosulfate as a food ingredient. Chemical information, biological data, and biochemical aspects of sodium thiosulfate are given in a 65 page summary containing 366 references.

PB-223 857/4GA PC$4.25/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - GELATIN.
Final rept. 1920-73.
Aug 73, 106p* TR-72-1552-35 FDABF-GRAS-174
Contract FDA-72-104

Descriptors: (*Gelatins, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredient.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of gelatin as a food ingredient. Chemical information, biological data, and biochemical aspects of gelatin are given in a 104 page summary containing 775 references.

PB-223 858/2GA PC$3.75/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - TANNIC ACID.
Final rept. 1920-73.
Jul 73, 84p* TR-72-1552-31 FDABF-GRAS-175
Contract FDA-72-104

Descriptors: (*Tannic acid, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the availabla scientific literature from 1920 to 1973 related to the safety of tannic acid as a food ingredient. Chemical information, biological data, and biochemical aspects of tannic acid are given in a 82 page summary containing 237 references.

PB-223 859/0GA PC$3.75/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - TALLOW AND STEARIC ACID.
Final rept. 1920-73.
Jul 73, 79p* TR-72-1552-33 FDABF-GRAS-176
Contract FDA-72-104

Descriptors: (*Tallow, *Food additives), (*Stearic acid, Food additives), Fats, Fatty acids, Organic acids, Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of tallow and stearic acid as food ingredients. Chemical information, biological data, and biochemical aspects of tallow and stearic acid are given in a 77 page summary containing 847 references.

PB-223 860/8GA PC$3.00/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS-SUCCINIC ACID.
Final rept. 1920-73.
Aug 73, 47p* TR-72-1552-33 FDABF-GRAS-177
Contract FDA-72-104

Descriptors: (*Succinic acid, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of succinic acid as a food ingredient. Chemical information, biological data, and biochemical aspects of succinic acid are given in a 45 page summary containing 441 references.

PB-223 861/6GA PC$3.50/MF$1.45
Informatics, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - INOSITOL.
Final rept. 1920-73.
Jul 73, 66p* TR-72-1552-32 FDABF-GRAS-178
Contract FDA-72-104

Descriptors: (*Sugar alcohols, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of inositol as a food ingredient. Chemical information, biological data, and biochemical aspects of inositol are given in a 64 page summary containing 596 references.

PB-223 862/4GA PC$4.50/MF$1.45
Tracor-Jitco, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS--ALUMINUM COMPOUNDS.
Final rept. 1920-73.
Jun 73, 150p* FDABF-GRAS-179

Descriptors: (*Aluminum inorganic compounds, *Food additives), (*Aluminum organic compounds, Food additives), Toxicology, Biochemistry, Chemistry, Metabolism, Food consumption, Reviews, Bibliographies.
Identifiers: Generally recognized as safe food ingredients, *GRAS food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of aluminum compounds as food ingredients. Chemical information, biological data, and biochemical aspects of aluminum compounds are given in a 134 page summary containing 203 references.

PB-223 863/2GA PC$3.50/MF$1.45
Food and Drug Research Labs., Inc., East Orange, N.J.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS BUTYLATED HYDROXYANISOLE.
Final rept. 1920-73.
Jun 73, 70p* FDABF-GRAS-180

Descriptors: (*Anisole, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients, Phenol/(butyl-ester)-methoxy.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of butylated hydroxyanisole as a food ingredient. Chemical information, biological data, and biochemical aspects of butylated hydroxyanisole are given in a 68 page summary containing 495 references.

PB-223 864/0GA PC$3.75/MF$1.45
Food and Drug Research Labs., Inc., East Orange, N.J.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - SORBIC ACID AND DERIVATIVES.
Final rept. 1920-73.
Jun 73, 95p* FDABF-GRAS-181

Descriptors: (*Organic acids, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *Sorbic acids, *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of sorbic acid and derivatives as food ingredients. Chemical information, biological data, and biochemical aspects of sorbic acid and derivatives are given in a 92 page summary containing 638 references.

PB-223 865/7GA PC$3.75/MF$1.45
Food and Drug Research Labs., Inc., East Orange, N.J.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - MALIC ACID.
Final rept. 1920-73.
Jun 73, 87p* FDABF-GRAS-182

Descriptors: (*Malic acid, *Food additives), Toxicology, Biochemistry, Chemistry, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, *Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of malic acid as a food ingredient. Chemical information, biological data, and biochemical aspects of malic acid are given in a 85 page summary containing 529 references.

PB-223 866/5GA PC$3.75/MF$1.45
Food and Drug Research Labs., Inc., East Orange, N.J.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS--ASCORBATES.
Final rept. 1920-73.
Aug 73, 99p* FDABF-GRAS-183

Descriptors: (*Ascorbic acid, *Food additives), Toxicology, Nutrition, Biochemistry, Chemistry, Food consumption, Reviews, Bibliographies.
Identifiers: *GRAS food ingredients, Generally recognized as safe food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of ascorbates as food ingredients. Chemical information, biological data, and biochemical aspects of ascorbates are given in a 96 page summary containing 262 references.

PB-223 867/3GA PC$10.75/MF$1.45
Tracor-Jitco, Inc., Rockville, Md.
SCIENTIFIC LITERATURE REVIEWS ON GENERALLY RECOGNIZED AS SAFE (GRAS) FOOD INGREDIENTS - GLUTAMATES.
Final rept. 1920-73.
Sep 73, 578p* FDABF-GRAS-184

Descriptors: (*Glutamates, *Food additives), Toxicology, Nutrition, Biochemistry, Chemistry, Food consumption, Reviews, Bibliographies.
Identifiers: Generally recognized as safe food ingredients, *GRAS food ingredients.

The Scientific Literature Review summarizes the available scientific literature from 1920 to 1973 related to the safety of glutamates as food ingredients. Chemical information, biological data, and biochemical aspects of glutamates are given in a 524 page summary containing 8320 references.

6I. Hygiene and Sanitation

PATENT-3 717 580/GA Not available NTIS
Department of the Navy Washington D C
METHOD OF DISINFECTING AND SELF-LIMITING SOLUTION THEREFOR.
Patent,
William H. Echols, George H. Fielding, and Rex A. Neihof. Filed 2 Dec 69, patented 20 Feb 73, 3p Rept nos. PAT-APPL-881 343,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Germicides), (*Germicides, *Hypochlorites), Citrates, Salts, Malic acid.
Identifiers: PAT-CL-252-106, Disinfectants, Malates.

The patent describes a solution containing an inorganic hypochlorite salt and an inorganic salt of a hydroxy carboxylic acid and optionally containing an acid to adjust the pH to 4.5-8 and/or a detergent, which disinfects sensitive materials without harming the material by remaining active for a short period of time due to a self consummation feature of the solution.

6J. Industrial (Occupational) Medicine

LA-UR-73-832/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
CALIBRATION STANDARDS FOR COUNTING ASBESTOS.
L. W. Ortiz, H. J. Ettinger, and C. I. Fairchild.
1973, 12p CONF-730518-3
Contract W-7405-eng-36

Descriptors: (*Asbestos, *Safety standards), Calibration, Counting techniques.

For abstract, see NSA 28 06, number 15146.

6K. Life Support

N-72-18136/GA PC$5.45/MF$1.45
General American Transportation Corp., Niles, Ill. General American Research Div.
VACUUM DISTILLATION: VAPOR-FILTERED--CATALYTIC-OXIDATION WATER RECLAMATION SYSTEM UTILIZING RADIOISOTOPES. FINAL REPORT, MARCH 1969--JUNE 1971.
R. J. Honegger, G. A. Remus, and E. K. Kurg.
Nov 71, 69p NASA-CR-125675, GARD-1490-900
Contract F33615-69-C-1486

Descriptors: (*Radioisotope heat sources, Space vehicles), (*Drinking water, *Production), (*Space vehicles, Drinking water), Catalysts, Condensates, Distillation, Respiration, Sweat, Urine, Uses.

For abstract, see NSA 28 04, number 08311.

N73-29054/6GA PC$6.00/MF$1.45
McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.
STUDY OF CO2 SORBENTS FOR EXTRAVEHICULAR ACTIVITY.
G. V. Colombo. Jul 73, 78p NASA-CR-114632, MDC-G4778
Contract NAS2-6959

Descriptors: *Carbon dioxide, *Extravehicular activity, *Portable life support systems, *Sorbents, Hydroxides, Magnesium, Metal oxides, Silver, Zinc.

For abstract, see STAR 1120

PATENT-3 706 535/GA Not available NTIS
Department of the Navy Washington D C
CARBON MONOXIDE BURNER FOR UNDERSEA HABITATS.
Patent,
Lawrence B. Taylor, Raymond L. Bentz, and Robert B. Porter. Filed 23 Nov 70, patented 19 Dec 72, 8p Rept nos. PAT-APPL-92 097,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Carbon monoxide, Life support), (*Life support, Underwater), (*Patents, Life support), Atmosphere, Helium.
Identifiers: *Atmospheric contamination control, PAT-CL-23-288-J, Hyperbaric atmospheres, *Underwater habitat atmospheres.

The present invention relates, in general, to atmospheric regeneration systems and, in particular, is a system for removing carbon monoxide from a pressurized helium atmosphere.

6L. Medical and Hospital Equipment

AD-768 110/9GA PC$10.25/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
A SYSTEMS STUDY OF THE CENTRAL APPOINTMENT SYSTEM AT WALTER REED GENERAL HOSPITAL.
Peter John Vanderzee. Jul 72, 163p Rept no. USAMC-ITC-2-72-10

Descriptors: (*Hospitals, Scheduling), Systems engineering, Medical personnel, Data processing systems, Computers.
Identifiers: Patients, Hospital administration, Outpatient clinics, Medical services.

The purpose of this study was to suggest improvements for Walter Reed's central appointment system. The problem was not only methods improvement, but also one of improving the scheduling of patients to clinics and doctors in the department of hospital clinics. The literature is reviewed and a determination of the pertinent clinic operational characteristics is made. The department of hospital clinics and the central appointment system are both analyzed. Results of the collected data are presented and specific recommendations are made from the findings. Finally, the concept of a computer assisted central appointment system is developed with both set-up and operational procedures detailed.

COO-2147-8/GA PC$3.50/MF$1.45
Utah Univ., Salt Lake City. Coll. Of Engineering.
PREPARATION AND CHARACTERIZATION OF BIOCOMPATIBLE POLYMERS BY RADIATION GRAFTING AND RADIOISOTOPE TECHNIQUE. TECHNICAL PROGRESS REPORT, JULY 15, 1972--JULY 14, 1973.
J. D. Andrade. May 73, 28p UTEC-MSE-73-93
Contract AT(11-1)-2147

Descriptors: (*Methacrylic acid esters, *Chemical radiation effects), (*Polypropylene, Chemical radiation effects), (*Siloxanes, Chemical radiation effects), Graft polymers, Research programs, Water.

For abstract, see NSA 28 05, number 10710.

COO-2208-3/GA PC$4.75/MF$1.45
Cleveland Clinic Foundation, Ohio (Usa). Dept. Of Artificial Organs.
AVAILABLE SPACE FOR A TOTALLY IMPLANTABLE CARDIAC PROSTHESIS. PROGRESS REPORT, JULY 1, 1972--MARCH 31, 1973.
Y. Nose. 1973, 55p
Contract AT(11-1)-2208

Descriptors: (*Chest, *Anatomy), (*Calves, Anatomy), (*Man, Anatomy), Biological effects, Mathematical models, Mechanical heart, Molding, Physiology.

For abstract, see NSA 28 04, number 08310.

PATENT-3 703 894/GA Not available NTIS
Department of the Navy Washington D C
RIGID FOAM POLYURETHANE HAND SPLINT.
Patent,
Dwight V. Galloway, Gordon E. King, Charles C. Ashbelle, and Michael F. Arrigo. Filed 16 Feb 71, patented 28 Nov 72, 4p Rept nos. PAT-APPL-115 458,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Medical supplies, *Patents), Hands, Burns, Isocyanate plastics.
Identifiers: PAT-CL-128-77, *Splints.

The present invention relates generally to a hand burn splint and more particularly to a rigid foam polyurethane hand splint to support the hand in a position as to prevent scar contractures from causing postburn deformities.

PATENT-3 721 764/GA Not available NTIS
Department of the Navy Washington D C
AUDITORY TEST FACILITY WITH MULTISTAGE SINGLE SIDEBAND HETERODYNING.
Patent,
Cletus M. Dunn. Filed 14 Jan 70, patented 20 Jan 73, 6p Rept nos. PAT-APPL-2 761,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D. C. 20231 $0.50.

Descriptors: (*Patents, *Audimetry), (*Test facilities, Audiometry), Test equipment, Modulation.
Identifiers: PAT-CL-179-1-N, Heterodyning.

The patent describes the design of a facility for testing auditory characteristics of humans. The invention is for testing anyone who needs to have the ability to discriminate between true tones and offset tones or at least satisfactory sensitivity to selected tones. Also this invention can be used for audiogrammetric analysis which is required of some individuals to ascertain their hearing qualifications for certain jobs.

PB-223 982/0GA PC$4.25/MF$1.45
American Hospital Supply Corp., Irvine, Calif. Biomedical Research Labs.
IMPROVED CANNULA DEVELOPMENT.
Final progress rept. 15 Mar 70-31 Aug 72,
Ralph Kafesjian, and Alexander S. Borsanyi. 15 Dec 72, 104p AK-1-70-2117-F
Contract PHS-70-2117
Prepared in cooperation with Washington Univ., Seattle.

Descriptors: (*Catheters, Design), (*Artificial kidneys, Catheters), Medical equipment, Laboratory animals, Sheep, Artificial kidneys, Silicones, Fabrication, Catherization, Veins, Blood vessels.
Identifiers: *Cannulae, *Hemodialysis.

A continuous taper and a flared expanding tip venous cannula were designed with emphasis on geometry of the vein-tip junction and flow conditions. Construction techniques using rotational casting of silicone rubber with wire reinforcing were developed. In vivo evaluation in sheep showed the continuous taper design provided longest survivals but both designs and control fell short of average survivals previously obtained with standard Teflon tips.

PB-224 013/3GA PC$4.25/MF$1.45
Missouri Univ. Medical Center, Columbia. Div. of Nephrology.

ADHERENCE OF BLOOD COMPONENTS OF ARTIFICIAL KIDNEY MEMBRANES.
Annual progress rept. Feb-Oct 72,
Karl D. Nolph, and John F. Maher. 31 Oct 72, 42p
AK-172-2202
Contract PHS-72-2202

Descriptors: (*Artificial kidneys, Membranes), (*Blood, Membranes), (*Adhesion, Blood), Mechanical organs, Dialysis, Coils, Electron microscopy, Miciophotography, Experimental data, Performance evaluation.
Identifiers: *Hemodialysis, Blood compatible materials.

Effects of the adherence of blood components to dialyzer membrances were assessed in commercially available coils. Dialysance of multiple solutes and coil resistance were measured using an aqueous perfusate at 100 ml/min single pass before and after in vitro perfusion of coils with whole blood plasma or saline. Similar studies were also performed with the aqueous test system before and after each clinical dialysis with up to as many 6 coil reuses. In all studies dialysance and resistance values remain essentially stable except when blood was air rinsed from coils. Morphologic studies of coil membranes following clinical dialysis by light scanning electron and transmission electron microscopy revealed dense deposits of many cellular and noncellular blood components on the membrane surface increasing with reuse. Studies are planned to investigate why such coating of up to 25% of the membrane area had little to no effect on coil performance unless air rinsing of blood had been performed.

SAN-857-1/GA PC$10.60/MF$1.45
Trw Systems, Redondo Beach, Calif.
EVALUATION OF PRACTICABILITY OF A RADIOISOTOPE THERMAL CONVERTER FOR AN ARTIFICIAL HEART DEVICE. PHASE 1, FINAL REPORT.
I. R. Jones, M. G. Ridgway, and D. R. Snoke. Apr 72, 336p
Contract AT(04-3)-857

Descriptors: (*Mechanical heart, *Design), (*Thermoelectric generators, Design), (*Radioisotope heat sources, Design), Blood circulation, Efficiency, Pumps, Radioisotope batteries, Research programs.

For abstract, see NSA 28 06, number 12980.

6M. Microbiology:

AD-767 789/1GA Reprint
Army Medical Research Inst of Infectious Diseases Frederick Md
'STAPHYLOCOCCUS AUREUS' ENTEROTOXIN B RELEASE (EXCRETION) UNDER CONTROLLED CONDITIONS OF FERMENTATION,
Joseph F. Metzger, Anna D. Johnson, William S. Collins, II, and Virginia McGann. 22 Jan 73, 4p
Availability: Pub. in Applied Microbiology, v25 n5 p770-773 May 73.

Descriptors: (*Staphylococcus aureus, *Fermentation), (*Toxins + antitoxins, Staphylococcus aureus), Growth, Bacteria, Culture media.

Release of Staphylococcus aureus enterotoxin B (SEB) into the culture medium was initiated during the mid-log phase of growth. A medium consisting of 4% N-Z Amine A (Sheffield), 0.2% dextrose, and 1% yeast extract supported maximum production of SEB. Although pH of the medium during cultivation did not significantly affect the growth curve of the organism, the time required for detectable excretion was affected, as was the final yield. Optimal conditions for SEB production were achieved with pH control at 7.0; alkaline control (pH 8.0) produced only minimal amounts of toxin, whereas acid control (pH 6.0) resulted in 50% reduction in yield. Slightly less SEB was produced when there was no extrinsic pH control, and cultures were buffered only by media constituents and by-products of growth. With pH control at 7.0, deletion of 0.2% dextrose from the medium resulted in 40% reduction in the 8-h yield. There was also a delay in production during early stages of fermentation. (Author)

AD-767 855/0GA Reprint
School of Aerospace Medicine Brooks AFB Tex
FURTHER STUDIES ON THE INFLUENCE OF STEROIDS ON VIRAL INFECTION IN MICE.
Progress rept. Jun 71-Jan 72,
David J. Giron, Patton T. Allen, Frank F. Pindak, and Jerome P. Schmidt. 2 Apr 73, 7p Rept no. SAM-TR-73-245
Availability: Pub. in Infection and Immunity, v8 n2 p151-155 Aug 73.

Descriptors: (*Infections, *Viruses), (*Steroids, Viruses), Arboviruses, Testosterone, Progesterone, Laboratory animals, Mice, Corticosteroid agents, Cell wall, Reproduction, Epidemiology.
Identifiers: Mayaro virus, Viral diseases, MM virus, Interferons.

Certain steroids have been reported to enhance experimental viral infections, whereas others have little or no effect. Interference with the interferon system has been suggested as a possible mechanism for the viral infection enhancing (VIE) activity of hormones. In the present study, steroids (prednisolone, progesterone, testosterone) which had no effect on MM virus infection, demonstrated VIE activity against Mayaro virus infection. It is suggested that the VIE activity of a hormone may be dependent on the viral agent used for challenge. Data are also presented which suggest that, in addition to interference with the interferon system, the VIE activity of steroid hormones may be the result of at least two other actions: alteration of cell membranes; and stimulation of initial viral replication. (Author)

AD-768 226/3GA PC$3.50/MF$1.45
Vienna Univ (Austria) Institut Fuer Virologie
STUDIES ON TICK-BORNE ENCEPHALITIS AND OTHER ARTHROPOD-BORNE VIRUS DISEASES.
Final technical rept.,
Christian Kunz, Horst Aspoeck, Walther Frisch-Niggemeyer, Hans Hofmann, and Alfred Radda. Jul 73, 73p ARDG(E)-E-1400
Contract DAJA37-72-C-4547

Descriptors: (*Virus diseases, *Arthropods), (*Arboviruses, *Ticks), Austria, Disease vectors, Rodents, Serodiagnosis, Insect control, Rodenticides, Switzerland, Vaccines.
Identifiers: Encephalitis, Interferons.

For the first time, a focus of tick-borne encephalitis (TBE) virus has been detected in Switzerland. Attempts to eradicate the virus from Austrain foci with insecticides and rodenticides suggest that rodent control may offer the most promising way of breaking the virus cycle, although supplementary tick control may prove useful. In 1972, 389 cases of TBE were diagnosed in Austria. A new formalin inactivated vaccine provoked antibodies in human volunteers receiving two doses. Of the four synthetic receptor substance analogs synthesised, two showed hemagglutination-inhibiting activity. Attempts to increase hemmaglutinating activity of arboviruses met with limited success. Tilorone and other interferon-inducing derivatives were active against TBE in mice. In a survey of 1162 avian sera collected in the Neusiedlersee area antibodies against Uukuniemi, Calovo, TBE, West Nile and Semliki viruses were detected. (Author)

AD-768 235/4GA Reprint
Naval Biomedical Research Lab Oakland Calif
AIRBORNE STABILITY OF SIMIAN VIRUS 40,
T. G. Akers, C. M. Prato, and E. J. Dubovi. 24 Apr 73, 3p
Availability: Pub. in Applied Microbiology, v26 n2 p146-148 Aug 73.

Descriptors: (*Viruses, Stability), (*Aerobiology, Viruses), Aerosols, Humidity, Temperature.
Identifiers: *Simian virus 40, SV 40.

The influence of relative humidity on the airborne survival of simian virus 40 (SV40) was studied by allowing virus aerosols to age in rotating drums at 21 or 32 C and at a relative humidity (RH) value ranging from 22 to 88%. Airborne SV40 virus was stable at every RH tested at 21C, but aerosols maintained at 32C were inactivated within 60 min at mid-range RH values. The unusual stability at 21C over a broad RH range indicates that potentially biohazardous situations may occur under laboratory conditions if this virus becomes accidentally airborne. (Author)

AD-768 264/4GA Reprint
Armed Forces Inst of Pathology Washington D C
STAINING OF BACTERIA IN TISSUE SECTIONS: A RELIABLE GRAM STAIN METHOD,
Robert C. Brown, and Howard C. Hopps. Oct 72, 8p
Availability: Pub. in American Jnl. of Clinical Pathology, v60 n2 p234-240 Aug 73.

Descriptors: (*Bacteria, Tissues(Biology)), (*Biological stains, Bacteria), Histology, Pathology, Infections, Diagnosis.
Identifiers: Gram stain.

A consistently reliable Gram stain procedure which differentially stains both Gram-positive and Gram-negative bacteria in tissue sections is presented. A comparison of this new method with well known Gram stain methods demonstrates its superiority in differentially staining Gram-positive and Gram-negative bacteria in control (experimental) tissue lesions when types of fixatives, duration of tissue storage prior to paraffin embedment, types of embedding agents, and section thickness are varied. This method has also proved superior to others in demonstrating many different types of bacteria and other infectious agents in sections of tissue derived from human lesions. (Author)

AD-768 274/3GA Reprint
Army Medical Research Inst of Infectious Diseases Frederick Md
BIOLOGICAL CONTAINMENT FACILITY FOR STUDYING INFECTIOUS DISEASE,
Ralph W. Kuehne. 29 May 73, 5p
Availability: Pub. in Applied Microbiology, v26 n3 p239-243 Sep 73.

Descriptors: (*Medical laboratories, *Infectious diseases), (*Virus diseases, Medical laboratories), Microorganisms, Laboratory equipment, Medical research, Design, Personnel, Biological contamination.

To effectively characterize newly recognized viruses and to study other highly virulent infections for which no effective prophylaxis or therapy exists, special containment facilities must be utilized and conventional techniques modified to minimize risk to laboratory personnel. This paper describes a laboratory suite for such studies, contained within a larger research facility; two separate biological safety cabinet systems, animal rooms support laboratories, change room facilities, shower, air lock, and other safety features are contained in the area. Details of design, construction, airflows, and equipment are described in addition to a discussion of operation, techniques, and modification of laboratory equipment utilized in actual studies. (Author)

AD-768 275/0GA Reprint
Naval Medical Research Inst Bethesda Md
METABOLISM OF RICKETTSIA TSUTSUGAMUSHI AND RICKETTSIA RICKETTSI IN IRRADIATED HOST CELLS.
Medical research progress rept. no. 32,

E. Weiss, A. E. Green, R. Grays, and L. M. Newman. 22 Feb 73, 6p
Availability: Pub. in Infection and Immunity, v8 n1 p4-7 Jul 73.

Descriptors: (*Rickettsia, Metabolism), Rickettsia rickettsii, Rickettsia tsutsugamushi, Infections, Tissue culture cells, Cells(Biology).
Identifiers: Host parasite relations.

The metabolism of Rickettsia tsutsugamushi (Gilliam strain) multiplying in irradiated L cells was investigated by methods involving the use of (14)C-labeled substrates and cycloheximide, an inhibitor of eukaryotic metabolism. Cycloheximide-resistant amino acid and adenine incorporations were appreciably higher in infected than in uninfected cultures during the period from 3 to 5 or 6 days postinoculation. The metabolism of R. rickettsi was similarly studied in primary duck embryo cells, which are more susceptible to infection with this rickettsia than are L cells. A difference in cycloheximide-resistant activity between infected and uninfected cultures was also noted, but was small. This finding is attributed to the more limited growth of R. rickettsi. (Author)

COM-73-11615/4GA Reprint
National Marine Fisheries Service, Oxford, Md. Middle Atlantic Coastal Fisheries Center.
AN ATTEMPT TO IMMUNIZE THE BLUE CRAB, 'CALLINECTES SAPIDUS' WITH VERTEBRATE RED BLOOD CELLS,
G. B. Pauley. 24 Jul 72, 3p NOAA-73082903
Pub. in Experientia, v29 p210-211 1972.

Descriptors: (*Antigens, Crabs), (*Immunization, *Crabs), Crustacea, Invertebrates, Agglutination, Chickens, Rabbits, Experimental data, Tests, Agglutinins, Erythrocytes, Vertebrates, Immune serums.
Identifiers: Callinectes sapidus, Blue crabs, *Hemolymph.

Since many invertebrate animals, including crustaceans, possess natural aggultinins in their serum, a study of blue crab (Callinectes sapidus) hemolymph was undertaken to determine: If natural agglutinins were present; if titers could be increased by prior immunization; and if there was cross-reaction with heterologous antigen. The current work indicates at best a very weak adaptive immune response and one without specificity, similar to that of other invertebrates.

COM-73-11619/6GA Reprint
Oregon State Univ., Corvallis. Dept. of Food Science and Technology.
IDENTIFICATION OF THE VOLATILE COMPOUNDS PRODUCED IN STERILE FISH MUSCLE ('SEBASTES MELANOPS') BY 'PSEUDOMONAS FRAGI',
A. Miller III, R. A. Scanlan, J. S. Lee, and L. M. Libbey. 19 Jan 73, 5p NOAA-73091905
Grant NOAA-043-158-4
Also pub. as Oregon State Univ., Corvallis. Agricultural Experiment Station, Technical Paper-3506.
Pub. in Applied Microbiology, v25 n6 p952-955 Jun 73.

Descriptors: (*Fishes, *Food deterioration), (*Bacteria, Fishes), Muscles, Flavor, Odor, Food processing, Amino acids, Esters, Gas chromatography, Spectrum analysis.
Identifiers: Sea Grant program, Pseudomonas fragi, Sebastes melanops.

Volatile compounds produced by Pseudomonas fragi strain 18 in sterile fish muscle (Sebastes melanops) were identified by combined gas-liquid chromatography and mass spectrometry. Compounds positively identified included dimethyl sulfide, acetaldehyde, ethyl acetate, ethyl alcohol, and dimethyl disulfide. Methyl mercaptan, ethyl butyrate, ethyl hexanoate, and butanone were tentatively identified by relative retention times of the authentic compounds. The fruity odor that developed in fish muscle during incipient spoilage was attributed to a synergistic flavor interaction involving the ethyl esters of acetate, butyrate, and hexanoate. (Author)

COO-3254-10/GA PC$3.75/MF$1.45
City Coll., New York. Dept. Of Biology.
CULTURE OF SALT MARSH MICROORGANISMS AND MICROMETAZOA.
J. J. Lee, and W. A. Mueller. 1973, 32p CONF-721092-1

Descriptors: (*Microorganisms, *Culture media), Animals, Aquatic ecosystems, Communities, Crustaceans, Mathematical models, Nematodes.

For abstract, see NSA 28 05, number 12546.

COO-3586-23/GA PC$3.25/MF$1.45
Rockefeller Univ., New York.
UPTAKE OF DNA BY BACTERIA AND EUCARYOTES.
A. Tomasz. 1973, 25p
Contract AT(11-1)-3586

Descriptors: (*Dna, *Uptake), Bacteria, Genetics, Immunology, Lymphocytes, Pneumococcus, Vaccines, Viruses.

For abstract, see NSA 28 06, number 15139.

N73-29049/6GA PC$3.00/MF$1.45
Naval Biomedical Research Lab., Oakland, Calif.
STUDIES ON POSSIBLE PROPAGATION OF MICROBIAL CONTAMINATION IN PLANETARY CLOUDS.
R. L. Dimmick, M. A. Chatigny, and H. Wolochow. Apr 73, 12p NASA-CR-133638
NASA ORDER W-13450

Descriptors: *Contamination, *Metabolism, *Microorganisms, *Planetary atmospheres, Aerosols, Jupiter (Planet), Probability theory, Saturn (Planet), Uranus (Planet).

For abstract, see STAR 1120

N73-29059/5GA PC$3.50/MF$1.45
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
BIODETECTION GRINDER.
F. J. Beyerle. 9 Aug 73, 30p NASA-TM-X-64765

Descriptors: *Bioassay, *Bioinstrumentation, *Microorganisms, *Spacecraft components, Plastics, Rocks, Spacecraft sterilization.

For abstract, see STAR 1120

N73-29381/3GA PC$4.50/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
MICROBIOLOGY OF SEDIMENTS AND ITS GEOLOGICAL ASPECTS.
W. E. Krumbein. Aug 73, 50p NASA-TT-F-15022
Contract NASW-2481
Tran-Transl. Into English from Geol. Rundschau (Bonn), V. 60, 1971 p 438-471.

Descriptors: *Geology, *Microbiology, *Sediments, Bacteria, Ionization, Organic compounds, Silicon.

For abstract, see STAR 1120

PB-223 910/1GA PC$2.75/MF$1.45
Providence Coll., R.I. Dept. of Biology.
THE EFFECTS OF DIFFERENTLY EXTRACTED ENDOTOXINS FROM ESCHERICHIA COLI ON RAINBOW TROUT (SALMO GAIRDNERI).
Final rept., Jul 67-Jun 73,
Gerard P. O'Leary. Jun 73, 21p W73-14769, OWRR-A-039-RI(1)
Contract DI-14-31-0001-3840

Descriptors: (*Trout, *Escherichia coli), (*Water pollution, Escherichia coli), (*Toxins and antitoxins, Trout), Inoculation, Fishes, Bacteria, Experimental data, Tests, Extraction, Toxicity, Lethal dosage.
Identifiers: Salmo gairdneri, Endotoxins, Water pollution effects(Animals), Rainbow trout.

A laboratory study on the possible lethal effects of Escherichia coli endotoxin on rainbow trout was conducted. The investigation was conducted using endotoxin extracted from Escherichia coli by four different chemical means. The endotoxin was obtained by four mild extraction methods (ethylenediamine-tetraacetic acid (EDTA) water, trichloracetic acid, and aqueous ether) in order to more closely approximate the endotoxin naturally released by E. coli during its natural growth cycle. The endotoxin preparations were administered to the trout by intraperitoneal injections in an aqueous solution. Results have shown that endotoxin extracted using EDTA caused death in the trout at concentrations of approximately 410.88 mg per kg. body weight and 207.16 mg/kg. body weight. Ether extracted endotoxin also was capable of causing death in trout in two to thirteen days at lower concentrations ranging from an average value of 154.62 mg/kg. body weight to 207.23 mg/kg. body weight. Death seems to occur more rapidly with increased endotoxin and with the use of small (younger) trout.

SLA-73-161/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
THERMORADIATION INACTIVATION OF NATURALLY OCCURRING ORGANISMS IN SOIL.
M. C. Reynolds, K. F. Lindell, and T. J. David. May 73, 10p

Descriptors: (*Microorganisms, *Sterilization), (*Spores, *Radioresistance), Bacillus subtilis, Biological radiation effects, Dose rates, Gamma radiation, Irradiation, Radiosterilization, Soils, Survival time, Synergism, Thermal radiation.

For abstract, see NSA 28 04, number 08356.

6N. Personnel Selection and Maintenance (Medical)

AD-768 128/1GA Reprint
Navy Medical Neuropsychiatric Research Unit San Diego Calif
PREDICTION OF PERFORMANCE IN STRESSFUL UNDERWATER DEMOLITION TRAINING,
E. K. Eric Gunderson, R. H. Rahe, and R. J. Arthur. 16 Apr 71, 5p Rept no. NMNRU-71-28
Availability: Pub. in Jnl. of Applied Psychology, v56 n5 p430-432 1972.

Descriptors: (*Diving, Demolition), (*Stress(Physiology), Diving), (*Physical fitness, Diving), Performance(Human), Training, Military personnel, Stress(Psychology), Emotions.

The relevance of selected biographical, physical fitness, and health status measures for success in underwater demolition team training was investigated. In particular, the contribution of the Cornell Medical Index was tested, and it was found that a special subscale from the CMI added significantly to multiple regression coefficients in two samples (N = 147 and N = 146). A combination of five variables, including the CMI subscale, yielded highly significant cross-validity coefficients. Physical fitness tests were the most important predictors of training success. (Author)

AD-768 311/3GA PC$7.25/MF$1.45
Naval Submarine Medical Research Lab Groton Conn
THE LONGITUDINAL HEALTH SURVEY: I. DESCRIPTION.
Medical research progress rept. no. 1,

Robert N. Sawyer, and J. H. Baker. 14 Dec 72, 103p Rept no. NSMRL-733

Descriptors: (*Submarine personnel, *Medical examination), (*Diving, Medical examination), Physical fitness, Data processing systems, Data storage systems, Records.
Identifiers: *Multiphasic health testing.

A multiphastic medical screening program has been developed for randomly selected submarine and diving personnel. Each individual passes through each of twelve phases of data collection: a statement of personal background and history, psychological testing, selected anthropometry, x-ray, dental evaluation, pulmonary function tests, audiometry, electrocardiogram, vision tests, selected blood chemistry analysis, blood pressure determination and physical exam. The accumulated data is being coded on Holerith cards for each of storage, retrieval and ultimate computer analysis. The present report defines the scope and objective of each of the measured parameters as well as the computer programs developed for the processing of these parameters. (Author)

6O. Pharmacology

AD-767 676/0GA PC$4.50/MF$1.45
Naval Postgraduate School Monterey Calif
MARIJUANA: FACTS AND FICTION.
Master's thesis,
Thomas Stafford Slater. Jun 73, 126p*

Descriptors: (*Hallucinogens, Public health), (*Attitudes, *Drugs), (*Behavior, Drugs), History, Psychotropic agents, Theses, Military personnel, Statistical data, Psychology, Physiology, Sociology.
Identifiers: Surveys, Cannabis, Drug abuse, Drug addiction, Drug users, *Marijuana, Questionnaires.

The thesis was written to outline the facts and myths concerning marijuana use as described in contemporary research and literature. It also gives a limited insight into the marijuana attitudes, beliefs, experience, and knowledge of the naval officer attending the Naval Postgraduate School (NPS). The results of a questionnaire developed by the National Commission on Marijuana and Drug Abuse and administered to the NPS students were discussed and compared to the results of the National Commission's National Survey. (Author)

AD-767 863/4GA Reprint
Naval Medical Research Inst Bethesda Md
COMPARATIVE BLOCKING ACTIONS OF METHYLATED 3-QUINUCLIDINYL AND 3-TROPINYL RESIDUES IN CHOLINERGIC SYSTEMS.
Medical research progress rept. no. 69,
Seymour L. Friess, William V. Hudak, Roger C. Durant, and Harold L. Martin. 28 Feb 73, 8p
Revision of report dated 27 Dec 72.
Availability: Pub. in the Biochemical Pharmacology, v22 p2203-2204 1973.

Descriptors: (*Parasympatholytic agents, N-heterocyclic compounds), Acetylcholine, Nerve fibers, Muscles, Polycyclic compounds, Amines, Neuromuscular transmission.
Identifiers: Tropanes, Quaternary ammonium salts.

On the basis of the experimental evidence presently available, it appears that the major effect of the structural change in tropine-p-tolylacetate methiodide leading to increased rigidity is an increased blockade potency at the neuromuscular junction and a slight potency decrease at the superior cervical ganglion. A probable inference from this observation is that the structures of the cholinergic receptors in these tissues may be different. (Author)

AD-768 026/7GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
BIOMOD SIMULATION OF PHARMACOKINETICS FOR LEUKEMIA CHEMOTHERAPY,
Thomas L. Lincoln, Phillip A. Harris, and Joseph F. Gross. Mar 73, 20p Rept no. P-4969
Prepared in cooperation with the University of Southern California, Los Angeles. School of Medicine, and the Arizona Univ., Tucson. Dept. of Chemical Engineering.

Descriptors: (*Drugs, Dosage), (*Leukemia, Chemotherapy), Concentration(Chemistry), Bone marrow, Blood, Tissues(Biology), Metabolism, Models(Simulations), Animals, Humans, Computer programs.

A major problem in leukemia chemotherapy is the delivery of a predicted drug dose to the site of action, for example, the bone marrow. It has been established that the effects of a drug in tissue culture and in animals are comparable if the concentration of a drug at the site of action and the period of its activity are known. Most protocols, however, have been concerned with the drug dose at the point of drug entry, i.e., IV, by mouth, intraperitoneally, etc. A model is required to change the input data into the needed drug concentration at point of action. Bischoff and Dedrick have developed a very reliable compartment model for the blood and for body organ systems. The model parameters are the blood flow through these body compartments, the tissue volumes, and drug metabolism within the compartments. This model and some applications have been programmed in the BIOMOD simulation format. Utilization of the BIOMOD to study drug dose at site of action is summarized.

AD-768 237/0GA Not available NTIS
Defence Standards Labs Maribyrnong (Australia)
A MYOTOXIN SECRETED BY SOME PISCIVOROUS 'CONUS' SPECIES,
Shirley E. Freeman, and R. J. Turner. 19 Apr 72, 15p
Availability: Pub. in British Jnl. of Pharmacology, p229-343 Oct 72.

Descriptors: (*Gastropoda, Toxins + antitoxins), (*Toxins + antitoxins, *Pharmacology), Australia, Molecular properties, Musculoskeletal system, Contraction, Cardiovascular system, Aquatic animals.
Identifiers: *Myotoxins, Conus magus, Conus achatinus.

The present communication describes an investigation of the pharmacology of myotoxins extracted from the venom ducts of C. magus and C. achatinus. An attempt has been made to test the toxins on as wide a spectrum of preparations as was possible having regard to the very limited supply of cone shells.

BNL-17819/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y. State Univ. Of New York, Stony Brook.
MANGANESE AND CATECHOLAMINES.
G. C. Cotzias, P. S. Papavasiliou, I. Mena, L. C. Tang, and S. T. Miller. 1972, 16p CONF-730441-2

Descriptors: (*Manganese, *Biological effects), Adrenaline, Age groups, Central nervous system, Cerebral cortex, Dopamine, Mice, Mutants, Noradrenaline.

For abstract, see NSA 28 05, number 12496.

BNL-17828/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y. State Univ. Of New York, Stony Brook.
UNEXPECTED FINDINGS WITH APOMORPHINE AND THEIR POSSIBLE CONSEQUENCES.
G. C. Cotzias, I. Mena, P. S. Papavasiliou, and J. Mendez. 1973, 10p CONF-730441-3

Descriptors: (*Catecholamines, *Biological effects), Injection, Medicine, Oral administration, Patients, Side effects, Therapy.

For abstract, see NSA 28 05, number 12497.

BNL-17849/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y. State Univ. Of New York, Stony Brook.
CHRONIC TREATMENT WITH LEVODOPA AND GROWTH HORMONE RELEASE.
I. Mena, G. C. Cotzias, P. S. Papavasiliou, J. Mendez, and F. C. Brown. 1973, 15p CONF-730441-4

Descriptors: (*Dopa, *Biological effects), (*Sth, *Secretion), Nervous system diseases, Patients, Therapy.

For abstract, see NSA 28 05, number 12498.

PB-223 963/0GA PC$3.00/MF$1.45
Minnesota Univ., Minneapolis. Dept. of Pharmacognosy.
ALLEVIATION OF LAKE POLLUTION BY UTILIZATION OF AQUATIC PLANTS FOR NUTRITIONAL, MEDICINAL OR INDUSTRIAL PURPOSES,
E. J. Staba. Sep 73, 37p* OWRR-A-025-Minn(6),, W73-14764

Descriptors: (*Aquatic plants, *Medicinal plants), (*Minnesota, Medicinal plants), Chemical analysis, Toxicity, Nutrients, Antineoplastic agents, Antibiotics.

The aquatic plants in Minnesota have been surveyed medicinally for chemical compounds such as alkaloids, flavonoids, tannins, saponins, steroids and lipids which might be useful in medicine. Examination of chemical constitutents was accomplished on the following plants collected from various lakes in Minnesota: Anacharis canadensis, Calla Polustris, Carex lacustris, Ceratophyllum demersum, Chara vulgaris, Eleocharis smallii, Lemna minor, Myriophyllum exalbescens, Nuphar variegatum, Nymphaea tuberosa, Potamogeton amplifolius, P. natans, P. pectinatus, P. richardsonu, P. zosteriformis, Sagittaria cuneata, S. latifolia, Sparganium eurycarpum, S. fluctuans, Typha angustifolia, Vallisneria americana, and Zizania aquetica. (Modified author abstract) Portions of this document are not fully legible.

6P. Physiology

AD-767 802/2GA Reprint
Webb Associates Inc Yellow Springs Ohio
METABOLIC HEAT BALANCE DATA FOR 24-HOUR PERIODS,
P. Webb. 1971, 6p AFOSR-TR-73-1312
Contract F44620-70-C-0045
Availability: Pub. in International Jnl. of Biometeorology, v15 n2-4 p151-155 1971.

Descriptors: (*Body temperature, *Metabolism), (*Calorimetry, Humans), Heat production(Biology), Stress(Physiology), Energy, Clothing.
Identifiers: Biomedical measurement, Water cooled suits, *Heat balance, Heat loss.

The major avenue for body heat loss was via the insulated water cooled garment, a conductive loss, K, which was measured from the mass flow rate of water multiplied by the difference in water temperature across the man. Evaporative heat loss, E, was known from an hourly weight record. A small convective loss, C, was measured in the air flowing through the metabolic rate monitor facepiece. Radiative heat exchange, R, was assumed to be negligible, and work, W, was zero since no exercise was taken in the experiments reported. The authors kept track of the relatively small heat losses or gains resulting from cold or hot liquids and foods taken, calling these H1f. Heat produc-

tion, M was known from integrating the metabolic rate monitor's continuous record of VO2. Thus, in the standard heat balance equation, here rearranged to solve for storage, S, all the right hand terms were known: S = K + E + C + R + W + Hlf - M. A value for S could be determined for each hour of the day and night; these values were surprisingly large, having both negative and positive signs. (Author)

AD-767 832/9GA Not available NTIS
Defence and Civil Inst of Environmental Medicine Downsview (Ontario)
SPONTANEOUS AND DRIVEN RESPONSES FROM PRIMARY NEURONS OF THE ANTERIOR SEMICIRCULAR CANAL OF THE PIGEON.
Research paper,
M. J. Correia, and J. P. Landolt. 1973, 17p Rept no. DCIEM-RP-811
Availability: Pub. in Advances in Oto-Rhino-Laryngology, v19 p134-148 1973.

Descriptors: (*Semicircular canals, *Nerves), (*Pigeons, Semicircular canals), Momentum, Motion, Vestibular apparatus, Sensory mechanisms.
Identifiers: *Neurophysiology, Angular acceleration.

One way to understand the mechanics by which angular movements of the head are transduced by the cupula-endolymph system of the semicircular canals is to monitor the output of this transduction as close to its site of origin as possible. This fact has led several vestibular neurophysiologists over the years to record the activity to a prescribed set of stimuli from primary neurons in the frog, the thornback ray, the cat, the squirrel monkey and, in the case of the present communication, the white king pigeon.

AD-767 845/1GA Not available NTIS
Toronto Univ (Ontario) Dept of Otolaryngology
CONSIDERATIONS REGARDING THE MECHANISM OF ENDOLYMPH CIRCULATION,
G. F. Dohlman. 1973, 9p
Also pub as Defense and Civil Inst. of Environmental Medicine, Downsview(Ontario). Report no. DCIEM-862.
Availability: Pub. in the Advances in Oto-Rhino-Laryngology, v19 p101-109 1973.

Descriptors: (*Lymph, Fluid flow), (*Ear, Lymph), Otorhinolaryngology, Vestibular apparatus, Secretion, Pressure, Cells(Biology), Canada.
Identifiers: *Endolymph.

It has for some time been taken for granted that circulation of endolymph is generated by a secretion to serve the purpose of cell nutrition of the membranous inner ear. From past studies conclusions have been drawn that from the point of view of endolymph circulation, active secretional processes are negligible. Nevertheless, the existence of a flow of endolymph from the cochlea saccule to the endolymphatic sac, and from the vestibular apparatus has since been so well documented, that its existence cannot be denied. The force producing this flow to the endolymphatic sac is not known to date. It could be either the pressure of a secretion in the peripheral labyrinth as generally assumed or a suction at the central end, i.e. the endolymphatic sac. Secretion as a source of pressure seems extremely unlikely. What remains, then, is a pulling force produced by the excretion through the endolymphatic sac as a source for the so-called 'longitudinal flow'.

AD-767 846/9GA Reprint
California Univ Torrance Dept of Psychiatry
NEUROENDOCRINE CORRELATES OF SLEEP STAGES IN MAN,
R. T. Rubin, P. R. Gouin, and R. E. Poland. 1972, 10p
Contract N00014-67-A-0385-0016
Report on Pharmacology and the Future of Man.
Availability: Pub. in the Proceedings of International Congress on Pharmacology (5th) San Francisco, Calif., 1972, v4 p124-133.

Descriptors: (*Sleep, *Pituitary hormones), Humans, Adenocorticotropic hormone, Secretion, Nerves, Endocrine glands, Central nervous system.
Identifiers: Gonadotropins, Endocrinology.

The same monoaminergic nerve circuits which are involved in the triggering and maintenance of sleep also may be directly involved in the regulation of anterior pituitary secretion. Growth hormone release is known to be coincident with slow wave sleep while corticotropin is released in the later hours of the sleep period. These studies have been extended by examining the release of the gonadotropins (lutenizing hormone); (follicle stimulating hormone) during sleep. Secretion of these two hormones was found to occur in highly variable, unrelated random pulses except for a slightly increased probability of lutenizing hormone secretion during rapid eye movement sleep. Thus, anterior pituitary hormones have quite different release patterns during normal sleep, indicating that the general shifts in CNS activity during sleep do not provide activation of all secretory neural circuits. (Author)

AD-767 866/7GA Reprint
Navy Medical Neuropsychiatric Research Unit San Diego Calif
THE VALUE OF ELECTROENCEPHALOGRAPHY IN ALCOHOLISM,
Paul Naitch. 1973, 24p Rept no. NMNRU-73-13
Availability: Pub. in Annals of the New York Academy of Sciences v215 p303-320, 30 Apr 73.

Descriptors: (*Electroencephalography, Addiction), (*Addiction, Diagnosis), Electrophysiology, Behavior, Genetics.
Identifiers: *Alcoholism.

A critical review of some of the recent contributions of electroencephalography (EEG) in alcoholism is reported. The EEG has been a valuable adjunct tool for diagnosis and prognosis of alcoholism, for clarifying the motivation of alcoholismic drinking behaviors, for brain wave biofeedback training of the alcoholics, and especially for a determination of some genetic predisposition toward alcoholism. (Author)

AD-768 123/2GA PC$3.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
A STUDY OF HUMAN VISUAL RECOVERY FROM GLARE,
Marvin T. Demers. Mar 73, 48p Rept no. USAMC-ITC-1-73-7

Descriptors: (*Vision, *Adaptation(Physiology)), (*Brightness, Recovery), Males, Performance tests, Human engineering, Scientific research, Reviews, Test facilities, Analysis of variance, Time.
Identifiers: Glare recovery.

Research was performed to investigate the following aspects of human vision: Can the time interval required for the effects of glare to dissipate be measured; and How are these time intervals distributed among a male population with normal vision. (Modified author abstract)

AD-768 137/2GA PC$3.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
DEPTH PERCEPTION WITH PERIPHERAL VISUAL CUES,
William D. West. May 73, 45p Rept no. USAMC-ITC-1-73-27

Descriptors: (*Visual acuity, *Performance tests), (*Space perception, Performance(Human)), Test methods, Test equipment, Experimental design, Reviews, Analysis.
Identifiers: Depth perception, Peripheral vision, Visual field, Visual cues.

The research is designed to determine if depth perception is adversely affected by a reduced field-of-view, and if it is, is the decrement caused by a loss of peripheral visual cues. Thirty-six male subjects were tested for depth perception on a Dolman device, under different conditions of field-of-view and visual cues. The results are reported.

AD-768 185/1GA PC$3.50/MF$1.45
Texas A and M Univ College Station
THE EFFECTS OF CORROSION ON THE RECOGNITION THRESHOLD OF SYMBOLS STAMPED INTO STEEL SURFACES.
Research rept.,
Daniel C. Clouser. May 72, 54p
Master's thesis.

Descriptors: (*Metal plates, Surface properties), (*Character recognition, Corrosion), Visual perception, Thresholds(Physiology), Performance tests, Visual inspection, Steel, Theses.
Identifiers: *Die stamped symbols, Corrosion removal.

The research consisted of an experimental determination of the effects of corrosion upon the recognition thresholds of symbols stamped into unprotected steel surfaces. The conclusions are reported. (1) even a small amount of surface corrosion is extremely detrimental to marking recognition; (2) removal of corrosion product becomes a less effective means of improving recognition characteristics of symbols as the degree of corrosion increases; and (3) viewing angle is relatively unimportant from the corrosion standpoint.

AD-768 343/6GA PC$4.75/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
DETECTION OF THE SLEEP SPINDLE IN THE HUMAN ELECTROENCEPHALOGRAM.
Master's thesis,
Dominick Richard Martinelli. Jun 73, 51p Rept no. GA/EE/73-2

Descriptors: (*Electroencephalography, *Sleep), Psychophysiology, Electrophysiology, Computer programs, Fourier analysis, Correlation techniques, Theses.
Identifiers: Computer aided analysis.

The purpose of this study is to develop and evaluate a computer program for detection of spindles in the human EEG. The computer program combines frequency analysis and cross-correlation to detect a sleep spindle, which is defined as a rhythmic burst of EEG activity of 12-14 Hz with a minimum of 0.5 sec duration. The results are presented in detection accuracies as an event to be counted and as projected accuracies for sleep classification when the spindle detection program is applied to separation of spindle stages and non-spindle stages. Over 678 minutes of nocturnal EEG data were analyzed with a resulting overall spindle detection accuracy of 66% (11% miss error and 23% false detection error). When the spindle detection program is used to separate the sleep data into spindle stages (Stage -2) and non-spindle stages (Stages -0, -1, and REM) an impressive 92% overall accuracy is attained. (Modified author abstract)

AD-768 344/4GA PC$9.50/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
A HIGH RESOLUTION MEASUREMENT OF THE ANISOTROPIC MODULATION TRANSFER FUNCTION OF THE HUMAN VISUAL SYSTEM.
Master's thesis,
Roland David Guidry. Jun 73, 147p Rept no. GA/EE/73-1

Descriptors: (*Visual perception, *Space perception), Vision, Psychophysics, Thresholds(Physiology), Anisotropy, Theses.
Identifiers: Amblyopia.

Apparatus and procedures were designed to measure differences in threshold perception of gratings for 12 grating orientations and 9 spatial frequencies (2.3 to 20.4 cycles per degree). Gratings were generated on an oscilloscope and rotated electronically at 15 degree increments using an image rotation device designed for this experiment. Fifteen subjects were tested using a multiple staircase paradigm: 12 staircases (one for each orientation) were run concurrently and randomly intermixed, with spatial frequency held constant. Results are presented as plots of contrast sensitivity versus grating orientation for each spatial frequency tested. Considerable variation occurred among the subjects, both in orientational preferences and experimental consistency. Three subjects were classified as meridional amblyopes, three as 'classics' (equal acuity for horizontal and vertical gratings but lower acuity for oblique gratings), and the remainder as having slight or inconsistent orientational preferences (from one spatial frequency to another). (Modified author abstract)

EUR-4964/GA PC$8.25/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
IODINE METABOLISM IN CHILDREN AND ADOLESCENTS IN A REGION OF THE EEC.
L. Karhausen, J. P. Pages, G. Vacca, A. Piepz, and M. De Visscher. Mar 73, 123p
In French. U.S. Sales Only.

Descriptors: (*Iodine 125, *Metabolism), (*Iodine 131, Metabolism), (*Infants, *Radionuclide kinetics), (*Adolescents, Radionuclide kinetics), Adults, Icrp, Recommendations, Thyroid.

For abstract, see NSA 28 04, number 08503.

N73-29043/9GA PC$3.00/MF$1.45
Scripta Technica, Inc., Washington, D.C.
THE EFFECTS OF MUSCULAR EXERCISE ON URINARY EXCRETIONS OF ADRENAL HARMONES IN THE NORMAL MAN.
M. Follenius, G. Brandenberger, M. Simeoni, M. B. Reinhardt, and O. Walch. Aug 73, 16p NASA-TT-F-15046
Contract NASW-2484
Tran-Transl. Into English from Arch. Sci. Physiol. (Paris), V. 26, 1972 p 315-324.

Descriptors: *Adrenal metabolism, *Physical exercise, *Psychological effects, Aldosterone, Corticosteroids.

For abstract, see STAR 1120

ORO-3662-16/GA PC$3.50/MF$1.45
Maryland Univ., College Park. Computer Science Center.
CONJECTURES ON THE PERCEPTION OF ELONGATION.
E. S. Deutsch. Feb 71, 27p CONF-710986-1
Contract AT(40-1)-3662

Descriptors: (*Images, *Length), Biophysics.

For abstract, see NSA 28 04, number 10605.

PB-224 072/9GA PC$2.75/MF$1.45
Albert Einstein Coll. of Medicine, Bronx, N.Y.
CHRONIC PULMONARY DISEASE AND TOBACCO SMOKING.
Annual rept. Jul 72-Jun 73,
Sung Suh Park. Sep 73, 20p NIN/NHLI-NO1-HR2-2940-A73
Contract NO1-HR2-2940

Descriptors: (*Respiratory diseases, *Smoking), (*Tobacco, Smoking), Dyspnea, Lung, Laboratory animals, Dogs, Equipment, Blood gas analysis, Diffusion, Cilia, Respiration, Cell morphology, Animal physiology.
Identifiers: *Tobacco smoking.

During this first year all the necessary equipment for the execution of the smoking project using beagle dogs have been devloped and tested. Methodology for all the proposed studies, i.e., mucociliary clearance, ciliary motility, cell function, pulmonary function, lung morphology, and lung morphometrics has been developed. The smoking apparatus for the dogs has also been developed, tested, and installed. The initial group of dogs has been trained and commenced chronic smoke inhalation early in June 1973. These animals are being carefully observed and monitored periodically for blood gases, diffusing capacity, and mucociliary clearance.

SAN-899-X-1/GA PC$3.00/MF$1.45
Scripps Clinic and Research Foundation, la Jolla, Calif.
DIRECT, LONG-TERM OBSERVATION OF HEMATOPOIETIC MARROW. PROGRESS REPORT, JULY 1, 1972--JULY 15, 1973.
1973, 7p
Contract AT(04-3)-899

Descriptors: (*Hematopoietic system, *Physiology), Bone marrow cells, Spleen, Storage.

For abstract, see NSA 28 06, number 15158.

UR-3490-327/GA PC$8.00/MF$1.45
Rochester Univ., N. Y. Dept. Of Radiation Biology and Biophysics.
STUDIES OF ERYTHROCYTE MEMBRANE RIGIDITY.
R. S. Heusinkveld. 1973, 116p

Descriptors: (*Erythrocytes, *Membranes), Anemias, Atp, Calcium, Chemical composition, Man, Metabolism, Morphological changes, Stability.

For abstract, see NSA 28 05, number 12604.

6Q. Protective Equipment

AD-768 313/9GA PC$2.75/MF$1.45
Naval Submarine Medical Research Lab Groton Conn
A REVIEW OF AVAILABLE HEATED WET-SUIT PROTECTION FOR DIVERS AND SWIMMERS,
Frederick P. Rentz. 28 Feb 73, 23p* Rept no. NSMRL-739

Descriptors: (*Diving, Protective clothing), (*Underwater clothing, Heaters), Thermal insulation, Electricity, Batteries + components, Radioactive isotopes, Chemicals.

A review of current information concerning heat replacement wet-suits for divers is presented. The limitations of physiologic response to cold, aided by modern insulative garments, are defined, and the necessity for supplemental heat is demonstrated. Developments in electrically heated wet-suits and hot water suits are presented, as well as information concerning batteries, chemical heaters and radioisotope-fueled heaters. (Author)

PATENT-3 721 994/GA Not available NTIS
Department of the Navy Washington D C
DUAL VISOR HEADGEAR.
Patent,
David N. DeSimone, and Frank A. Catroppa. Filed 29 Mar 71, patented 27 Mar 73, 4p Rept nos. PAT-APPL-128 667,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D. C. 20231 $0.50.

Descriptors: (*Protective mask facepieces, Helmets), (*Patents, Protective mask facepieces), Attachment, Maneuverability, Protection, Eyes, Pilots, Ejection.
Identifiers: Visors, PAT-CL-2-6.

It is the purpose of the invention to provide in a dual visor helmet capable of quickly and positively positioning both visors in front of the face prior to an ejection emergency by a single manipulation of the wearer. Another object of the invention is to provide a helmet having selective retractibility of the visors.

6R. Radiobiology

AAEC/E-247/GA PC$3.00/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
RADIATION DOSE INCURRED FROM THE ADMINISTRATION OF "SKELTEC".
E. L. R. Hetherington. Mar 73, 16p
U.S. Sales Only.

Descriptors: (*Patients, *Radiation dose distributions), (*Technetium 99, *Retention), (*Bone tissues, *Radiation doses), (*Kidneys, Radiation doses), Bone marrow, Computer calculations, Decay, Internal irradiation, Isomeric nuclei, Labelled compounds, Liver, Radioisotope scanning, Radionuclide administration, Skeleton.

For abstract, see NSA 28 06, number 13092.

AAEC/LIB/Bib-373/GA PC$6.25/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
HUMAN EXPOSURE TO URANIUM. A BIBLIOGRAPHY.
E. A. Newland. Jan 73, 85p
U.S. Sales Only.

Descriptors: (*Uranium, *Biological radiation effects), (*Miners, *Radiation hazards), (*Personnel, Radiation hazards), (*Animals, Radiation hazards), Bibliographies, Daughter products, Inhalation, Mining, Ore processing, Radiation protection, Radon, Toxicity, Uranium ores.

For abstract, see NSA 28 05, number 11087.

ANL-7970/GA PC$14.50/MF$1.45
Argonne National Lab., Ill.
DIVISION OF BIOLOGICAL AND MEDICAL RESEARCH ANNUAL REPORT, 1972.
Dec 72, 246p
Contract W-31-109-Eng-38

Descriptors: Leading abstract.

For abstract, see NSA 28 06, number 15071.

BNWL-SA-4511/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
APPLICATIONS OF A GENERAL COMPUTATIONAL MODEL FOR COMPOSITE ENVIRONMENTAL RADIATION DOSES.
J. K. Soldat, D. A. Baker, and J. P. Corley. 1972, 18p CONF-730503-5
Contract AT(45-1)-1830

Descriptors: (*Environment, *Radioactivity), (*Human populations, *Radiation doses), (*Radioactive waste disposal, *Radiation hazards), Computer calculations, Computer codes, Daughter products, H codes, Mathematical models, Nuclear industry, Radioactive wastes, Radioisotopes, Radionuclide migration, Time dependence, Fuel reprocessing plants, Licensing, Nuclear power plants, Regulations, Us aec.

For abstract, see NSA 28 04, number 08132.

BNWL-SA-4533/GA PC$3.00/MF$1.45
Battelle-Northwest, Richland, Wash. Pacific Northwest Lab.
ENERGY STRAGGLING PARAMETERS FROM SINGLE EVENT SPECTRA.
W. E. Wilson, L. H. Toburen, and W. A. Glass. 1972, 14p CONF-730431-5

Descriptors: (*Protons, *Energy losses), (*Nitrogen, *Radiation doses), (*Hydrogen, Radiation doses), (*Methane, Radiation doses), Absorption, Benzene, Stopping power.

For abstract, see NSA 28 05, number 12010.

BNWL-SA-4545/GA PC$3.75/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
STUDY OF SELECTED PARAMETERS AFFECTING THE RADIATION DOSE FROM DRINKING WATER DOWNSTREAM OF NUCLEAR FACILITIES.
D. H. Denham, and J. K. Soldat. 1973, 32p CONF-730603-6

Descriptors: (*Chromium 51, *Radioecological concentration), (*Sodium 24, Radioecological concentration), (*Arsenic 76, Radioecological concentration), (*Antimony 122, Radioecological concentration), Diffusion, Drinking water, Gastrointestinal tract, Man, Neptunium 239, Radiation doses, Radionuclide migration, Washington.

For abstract, see NSA 28 06, number 13089.

BNWL-SA-4680/GA PC$3.50/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
DETECTION OF EXP 103 PD AND EXP 51 CR IN THREE INDIVIDUALS OF DIFFERENT WEIGHT TO HEIGHT RATIOS.
W. P. Walsh, J. R. Houston, and G. A. Rieksts. 1973, 26p CONF-730439-2

Descriptors: (*Radionuclide kinetics, *Whole-body counting), (*Palladium 103, *Retention), (*Chromium 51, Retention), Height, Inhalation, Internal irradiation, Personnel dosimetry, Radiation doses, Radioactive aerosols, Scintillation counters, Tissue distribution, Weight.

For abstract, see NSA 28 06, number 13090.

BNWL-SA-4710/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
SYSTEM FOR SEPARATING EXPIRED FROM INSPIRED AEROSOL DURING THE INHALATION EXPOSURE OF BEAGLE DOGS.
D. K. Craig, J. R. Decker, and J. P. Herring. (nd). 5p CONF-730527-1

Descriptors: (*Breath, *Radiation monitoring), (*Lungs, *Radionuclide kinetics), (*Gold 198, *Retention), Air, Atmosphere exposure chambers, Beagles, Inhalation, Internal irradiation, Radiation doses, Radioactive aerosols, Separation processes, Time dependence.

For abstract, see NSA 28 05, number 11093.

BNWL-1183-14/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
MEASUREMENT OF RADIATION EXPOSURE OF ASTRONAUTS BY RADIOCHEMICAL TECHNIQUES. QUARTERLY RESEARCH REPORT TO THE NASA MANNED SPACECRAFT CENTER, JANUARY 1, 1973--APRIL 1, 1973.
R. L. Brodzinski. 15 Apr 73, 12p
Contract AT(11-1)-1830

Descriptors: (*Astronauts, *Radiation doses), (*Cosmic radiation, *Biological radiation effects), Biological dosemeters, Cesium 137, Iron 55, Potassium 40, Radiometric analysis, Sampling, Sodium 24, Urine.

For abstract, see NSA 28 05, number 11024.

BNWL-1697/GA PC$7.60/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
CONSIDERATIONS IN THE ASSESSMENT OF THE CONSEQUENCES OF EFFLUENTS FROM MIXED OXIDE FUEL FABRICATION PLANTS.
J. M. Selby, E. C. Watson, J. P. Corley, D. A. Waite, and L. A. Carter. Jun 73, 159p
Contract AT(45-1)-1830

Descriptors: (*Fuel fabrication plants, *Radiation monitoring), (*Plutonium, Radiation monitoring), Accidents, Environment, Fabrication, Nuclear fuels, Plutonium oxides, Radioactive wastes, Uranium oxides.

For abstract, see NSA 28 06, number 12856.

CEA-R-4009(1)(2ad.Ed.)/GA
PC$4.75/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.
NORMALIZATION OF THE PHYSICAL TESTS FOR EXTERNAL IRRADIATION MEASURING DETECTORS. PART I. DETECTORS MEASURING EXTERNAL IRRADIATION DUE TO ELECTROMAGNETIC RADIATION.
1973, 51p
In French. U.S. Sales Only.

Descriptors: (*Dosimeters, *Calibration), (*Radiation monitors, Calibration), (*Gamma sources, *Calibration standards), External irradiation, Gamma radiation, Pulsed irradiation, Sensitivity, X radiation.

For abstract, see NSA 28 06, number 12912.

CEA-R-4416/GA PC$3.25/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
PHYSICO-CHEMICAL STATE OF THE LANTHANIDES CERIUM 144 AND THULIUM 170, INTRODUCED AS DISSOCIATED SALTS AT ACID PH IN THE RAT PLASMA.
R. Masse, B. Arnoux, I. L'Hullier, and J. Lafuma. Jun 73, 22p
In French. U.S. Sales Only.

Descriptors: (*Cerium 144, *Retention), (*Thulium 170, Retention), (*Liver, *Radionuclide kinetics), Chemical bonds, Chemical state, Excretion, Injection, Ph value, Proteins, Rats, Uptake.

For abstract, see NSA 28 05, number 11094.

CEA-R-4431/GA PC$9.50/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
STUDY OF THE EARLY LUNG CLEARANCE OF LANTHANUM 140.
C. Pasquier. May 73, 150p
In French. U.S. Sales Only.

Descriptors: (*Lanthanum 140, *Lung clearance), (*Lungs, *Radionuclide kinetics), Biological models, Chemical bonds, Chemical preparation, Dtpa, Excretion, Inhalation, Lipoproteins, Macacus, Ph value, Polymerization, Radioactive aerosols, Retention, Solutions, Time dependence.

For abstract, see NSA 28 05, number 11095.

COM-73-11572/7GA Reprint
National Marine Fisheries Service, Beaufort, N.C. Atlantic Estuarine Fisheries Center.
EFFECTS OF CONTINUOUS LOW-LEVEL GAMMA RADIATION ON SESSILE MARINE INVERTEBRATES.
R. B. Williams, and Marianne B. Murdock. 1973, 14p NOAA-73073016
Contract AT(49-4)-5
Pub. in International Atomic Energy Agency, Vienna, p551-563 1973. Report no. IAES-SM-158/34.

Descriptors: (*Gamma rays, Invertebrates), (*Aquatic animals, Gamma rays), (*Radiation effects, Aquatic animals), Porifera, Coral, Oysters, Barnacles, Ionizing radiation.
Identifiers: Hymenacidon heliophila, Astrangia danae, Crassostrea Virginica, Balanus, Molgula manhattensis.

Effects of chronic irradiation were examined on six species, sponge (Hymenacidon heliophila), coral (Astrangia danae), oyster (Crassostrea virginica), slipper shell (Crepidula fornicata), barnacle (Balanus sp.) and ascidian (Molgula manhattensis). Organisms were maintained in running seawater and irradiated with a (60)Co source at least 94.3% of the time for periods of approximately 3 to 7 months. Each species was exposed to each of 10 dose-rates ranging from 0.0000085 to 21.2 rad/h. Growth of new tissue by sponge colonies was reduced by irradiation as low as 0.85 rad/h. Dose rates of 4.2 rad/h damaged coral and slightly reduced growth and survival of oysters. Slipper shells grew well exposed to 8.5 rad/h as did ascidians exposed to 1.7 rad/h but there were no consistent radiation effects. Barnacles died from factors not associated with radiation, but one individual survived and grew slightly at 0.85 rad/h. Respiration per gram live weight of sponge colonies was reduced at higher dose-rates. (Author)

COM-73-11720/2GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
BIOLOGICAL EFFECTS OF MICROWAVES. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Elizabeth A. Harrison. Oct 73, 81p* NTIS-WIN-73-070

Descriptors: (*Microwaves, *Radiation effects), (*Bibliographies, Microwaves), Ovens, Microwave equipment, Eye, Radar, Central nervous system, Tissues(Biology), Radiation hazards.
Identifiers: Electromagnetic radiation hazards, Microwave radiation leakage, Microwave radiobiology, Cardiac pacemakers, Microwave ovens.

The NTISearch bibliography contains 76 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. Bibliography covers the biological effects on man and animals that can result from exposure to microwaves. (Author)

CONF-730518-2/GA PC$4.75/MF$1.45
Argonne National Lab., Ill.
RADIOLOGICAL ASSISTANCE TEAM: ORGANIZATION AND EXPERIENCE.
G. T. Lonergan. May 73, 51p

Descriptors: (*Radiation protection, *Planning), Accidents, Radiation monitoring, Us aec, Us organizations.

For abstract, see NSA 28 06, number 15038.

COO-1210-81/GA PC$3.00/MF$1.45
Wisconsin Univ., Madison. Lab. Of Genetics.
ACQUIRED IMMUNOLOGIC TOLERANCE IN CHIMERAS AND HISTOCOMPATIBILITY FACTORS IN CATTLE AND THEIR RELATIONSHIP TO THOSE IN HUMANS. ANNUAL TECHNICAL PROGRESS REPORT XI, SEPTEMBER 15, 1972--MAY 15, 1973.
W. H. Stone. 28 May 73, 15p
Contract AT(11-1)-1210

Descriptors: (*Cattle, *Biological radiation effects), (*Erythrocytes, Biological radiation effects), Antigens, Chimeras, Dose-response relationships, Fractionated irradiation, Gamma radiation, Hematopoietic system, Immune reactions, Immunity, Immunoglobulins, Man, Physiology, Tissues, Transplants, Whole-body irradiation.

For abstract, see NSA 28 05, number 11046.

COO-3011-2/GA PC$3.25/MF$1.45
Helsinki Univ. (Finland). Dept. Of Radiochemistry.
RADIOACTIVE FOODCHAINS IN THE SUBARCTIC ENVIRONMENT. SUMMARY REPORT FOR THE PERIOD AUGUST 15, 1970--AUGUST 14, 1973.
J. K. Miettinen. May 72, 24p
Contract AT(11-1)-3011

Descriptors: (*Eskimos, *Radionuclide kinetics), (*Cesium 137, *Retention), (*Iron 55, *Radioecological concentration), (*Polonium 210, Radioecological concentration), Fallout, Finland, Seafood, Deer, Food chains, Lichens, Meat, Radionuclide migration, Seasonal variations, Whole-body counting, Aquatic ecosystems, Diffusion, Earth atmosphere, Fishes, Invertebrates, Lead, Lead 210, Plankton, Plants, Quantity ratio, Terrestrial ecosystems.

For abstract, see NSA 28 05, number 11089.

COO-3095-11/GA PC$3.00/MF$1.45
Albert Einstein Medical Center, Philadelphia, PA. Dept. Of Genetics.
ULTRAVIOLET LIGHT EFFECTS ON NUCLEIC ACID FORMATION AND GENETIC EVENTS IN BACTERIA. ANNUAL PROGRESS REPORT.
C. O. Doudney. Apr 73, 9p
Contract AT(11-1)-3095

Descriptors: (*Escherichia coli, *Genetic radiation effects), (*Mutations, *Radioinduction), (*Nucleic acids, *Biosynthesis), Biological recovery, Dna, Radiation injuries, Rna, Ultraviolet radiation.

For abstract, see NSA 28 06, number 13022.

COO-3125-1/GA PC$4.00/MF$1.45
Brandeis Univ., Waltham, Mass.
PHOTOREACTIVATION AND DARK REPAIR AND THEIR EVOLUTIONARY ASPECTS.
A. Kelner. 1973, 36p
Contract AT(11-1)-3125

Descriptors: (*Dna, *Biological repair), Biological radiation effects, Enzymes, Photoreactivation, Ultraviolet radiation.

For abstract, see NSA 28 05, number 10983.

COO-3267-4/GA PC$3.25/MF$1.45
Jackson Lab., Bar Harbor, Maine.
NINETEEN PARACENTRIC CHROMOSOMAL INVERSIONS IN MICE.
T. H. Roderick, and N. L. Hawes. 1973, 21p
Contract AT(11-1)-3267

Descriptors: (*Chromosomal aberrations, *Radioinduction), (*Spermatozoa, *Biological radiation effects), (*Mutagens, *Biological effects), Genetics, Meiosis, Mice, Radiations.

For abstract, see NSA 28 06, number 13072.

COO-3271-4/GA PC$4.25/MF$1.45
Johns Hopkins Univ., Baltimore, MD. Dept. Of Biochemistry.
GENETIC TRANSFORMATION IN HEMOPHILUS INFLUENZAE. THREE YEAR COMPREHENSIVE REPORT, SEPTEMBER 15, 1970--SEPTEMBER 14, 1973.
R. M. Herriott. 1973, 41p
Contract AT(11-1)-3271

Descriptors: (*Haemophilus, *Genetic radiation effects), (*Dna, *Biochemical reaction kinetics), (*Enzymes, Biochemical reaction kinetics), Hydrogen peroxide, Mutagenesis, Phosphotransferases, Radiation protection, Thymine, Ultraviolet radiation, Yeasts.

For abstract, see NSA 28 06, number 13023.

COO-3380-5/GA PC$3.00/MF$1.45
New York Univ., N. Y. Inst. Of Environmental Medicine.
EFFECT OF DOSE FRACTIONATION ON THE RECOVERY OF RADIATION-INDUCED ONCOGENESIS IN RAT SKIN.
R. E. Albert, and F. J. Burns. 1973, 20p CONF-730436-1
Contract AT(11-1)-3380

Descriptors: (*Neoplasms, *Radioinduction), (*Carcinogenesis, *Biological recovery), (*Skin, *Biological radiation effects), Fractionated irradiation, Radiation doses, Radiations, Rats, Survival time, Tumor cells.

For abstract, see NSA 28 05, number 11047.

COO-3380-6/GA PC$3.00/MF$1.45
New York Univ., N. Y. Inst. Of Environmental Medicine.
SIEVE EFFECT FOR TUMOR INDUCTION WITH LOW VOLTAGE X-RAYS IN RAT SKIN.
R. E. Albert, and F. J. Burns. 1972, 14p CONF-730431-3
Contract AT(11-1)-3380

Descriptors: (*Neoplasms, *Radioinduction), (*Biological shielding, *Performance testing), Biological radiation effects, Let, Radiation protection, Rats, Response modifying factors, Skin, X radiation.

For abstract, see NSA 28 05, number 11048.

COO-3380-7/GA PC$3.00/MF$1.45
New York Univ., N. Y. Inst. Of Environmental Medicine.
GROWTH AND INDUCTION KINETICS OF RADIATION-INDUCED RAT SKIN TUMORS.
F. J. Burns, M. Vanderlaan, and R. E. Albert. 1970, 16p CONF-730431-4
Contract AT(11-1)-3380

Descriptors: (*Neoplasms, *Radioinduction), (*Skin, *Biological radiation effects), Biological models, Data, Diagrams, Dose-response relationships, Electrons, Growth, Mathematics, Radiation doses, Rats.

For abstract, see NSA 28 05, number 11049.

COO-3380-8/GA PC$7.75/MF$1.45
New York Univ., N. Y.
COMPARISON BETWEEN THE EARLY CELLULAR RESPONSE TO ELECTRON RADIATION AND THE PRODUCTION OF TUMORS.
I. P. Sinclair. Nov 72, 112p

Descriptors: (*Skin, Biological radiation effects), (*Biological radiation effects, *Dose-response relationships), (*Neoplasms, *Radioinduction), Animal cells, Carcinogenesis, Depth dose distributions, Electrons, External irradiation, Growth, Hair, Pathological changes, Radiation dose distributions, Rats.

For abstract, see NSA 28 04, number 08442.

EUR-5000/GA PC$3.25/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
VEGETABLE POLLUTION THROUGH THE SOIL: CESIUM-137.
R. Magnaval. May 73, 23p
In French. U.S. Sales Only.

Descriptors: (*Cesium 137, *Root absorption), (*Plants, *Radionuclide kinetics), Cea, Contamination, Contracts, Euratom, Forage, Grass, Ground water, Meteorology, Potassium, Potatoes, Soils, Wheat.

For abstract, see NSA 28 04, number 08523.

IFA-PN-26-1972/GA PC$3.00/MF$1.45
Institutul de Fizica Atomica, Bucharest (Romania).
DOSIMETRY OF HEAVY CORPUSCULAR RAYS (Z GREATER THAN OR EQUAL TO 2) WITH THE ASSISTANCE OF A NUCLEAR EMULSION AND SOLID TRACK DETECTORS.
D. Haseganu, and M. Nicolae. 12p
In French. U.S. Sales Only.

Descriptors: (*Ion dosimetry, Dielectric track detectors), (*Primary cosmic radiation, Ion dosimetry), (*Nuclear emulsions, *Performance), (*Dielectric track detectors, Performance), Cellulose, Nitrates, Nuclei.

For abstract, see NSA 28 05, number 10917.

JAERI-M-5018/GA PC$7.60/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
HEALTH PHYSICS AND SAFETY IN JAERI, NO. 14.
Dec 72, 205p
In Japanese. U.S. Sales Only.

Descriptors: (*Jaeri, *Radiation monitoring), Environment, Japan, Management, Radiation detection, Radiation hazards, Radiation protection, Radioactive waste disposal, Reactor sites, Safety.

For abstract, see NSA 28 04, number 08398.

K-L-6316/GA PC$3.00/MF$1.45
Oak Ridge Gaseous Diffusion Plant, Tenn.
MONITORING FOR URANIUM ACCUMULATIONS IN DIFFUSION PLANT EQUIPMENT.
R. G. Taylor. 21 May 73, 13p CONF-730611-8
Contract W-7405-eng-26

Descriptors: (*Gaseous diffusion process, *Monitoring), (*Uranium 235, Gaseous diffusion process), Buildup, Control, Enriched uranium, Gamma detection.

For abstract, see NSA 28 05, number 10963.

LA-5180-C/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
CONFERENCE ON PARTICLE ACCELERATORS IN RADIATION THERAPY, OCTOBER 2--5, 1972, LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO.
S. Partridge, and K. H. Harper. Mar 73, 165p CONF-721045-, EANDC(US)-180-U

Descriptors: (*Radiotherapy, *Meetings), (*Charged particles, Radiotherapy), Accelerators, Leading abstract, Research programs.

For abstract, see NSA 28 04, number 08413.

LBL-1799/GA PC$3.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
REPORT OF THE BIOASSAY LABORATORY 1969 TO 1972.
A. G. Low-Beer, T. W. Sargent, S. R. Wright, B. C. Buckley, and D. J. Yaeger. May 73, 9p
Contract W-7405-eng-48

Descriptors: (*Lawrence berkeley laboratory, *Personnel monitoring), Alpha sources, Beta particles, Feces, Gamma sources, Internal irradiation, Personnel, Radiation doses, Radioisotopes, Radiometric analysis, Radionuclide kinetics, Uptake, Urine, Whole-body counting.

For abstract, see NSA 28 06, number 13091.

LF-tr-76/GA PC$3.00/MF$1.45
ROUTES OF CESIUM-137, STRONTIUM-89, AND CERIUM-144 ABSORPTION.
L. A. Buldakov. 13p
Translated from pp 82-87 of Raspredelenie biologicheskoy deistvie i migratsiya radioaktivnykh izotopov, 1961.

Descriptors: (*Cesium 137, *Absorption), (*Strontium 89, Absorption), (*Cerium 144, Absorption), (*Blood, *Radionuclide kinetics), Dogs, Gastrointestinal tract, Intraperitoneal injection, Intravenous injection, Lymph vessels, Oral administration, Subcutaneous injection.

For abstract, see NSA 28 06, number 13097.

LF-tr-77/GA PC$4.50/MF$1.45
DISTRIBUTION OF CERIUM-144 IN ANIMALS.
Yu. I. Moskalev, and V. G. Kulikova. 46p
Translated from pp 53-78 of Raspredelenie biologicheskoy deistvie i migratsiya radioaktivnykh izotopov, 1961.

Descriptors: (*Cerium 144, *Radiation monitoring), (*Organs, *Radionuclide kinetics), Age dependence, Brain, Cats, Deposition, Distribution, Dogs, Frogs, Guinea pigs, Kidneys, Liver, Mice, Rabbits, Radioactivity, Skeleton, Spleen, Uptake.

For abstract, see NSA 28 06, number 13098.

ORNL-TIRC-73-18/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
DIAGNOSIS, TREATMENT, AND OCCURRENCES OF RADIONUCLIDE CONTAMINATION OF WOUNDS: A BIBLIOGRAPHY,
Kathy C. Miller. Apr 73, 22p* TIP-73-97-1119
Contract W7405-eng-26

Descriptors: (*Radioactive isotopes, *Wounds), (*Health physics, Radioactive isotopes), (*Bibliographies, Radioactive isotopes), Radioactive contaminants, Plutonium, Uranium.

The bibliography, of 164 selected references, was prepared by the Toxicology Information Response Center in reply to a specific request. The citations are divided into primary and secondary references, and each section is arranged by year and alphabetically by first author within each year. The sources searched covered a twenty-year time span, from 1952 through March 1973. The bibliography contains citations about both accidental and experimental incidences of wound contamination. The radionuclides primarily concerned are alpha-emitters, with a few references to beta and gamma emitting elements.

ORNL-TM-4140/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
ESTIMATION TECHNIQUE FOR MONTE CARLO CALCULATIONS OF DOSE FROM AN INTERNAL SOURCE OF PHOTONS.
G. G. Warner. Apr 73, 17p
Contract W-7405-eng-26

Descriptors: (*Gamma radiation, *Spatial dose distributions), (*Radioisotopes, Spatial dose distributions), (*Reference man, Spatial dose distributions), Buildup, Computer calculations, Decay, Distance, Dosimetry, Energy losses, Interactions, Internal irradiation, Monte carlo method, Patients, Photons, Point sources, Radiation doses, Radionuclide administration.

For abstract, see NSA 28 04, number 09888.

ORO-2903-48/GA PC$3.00/MF$1.45
Florida State Univ., Tallahassee. Dept. Of Psychology.
STUDIES IN THE USE OF IONIZING RADIATIONS AS STIMULI. PROGRESS REPORT, JUNE 16, 1972--JUNE 1, 1973.
J. C. Smith. 8p
Contract AT(40-1)-2903

Descriptors: (*Behavior, *Biological radiation effects), (*Saccharin, *Avoidance), Gamma radiation, Photon beams, Radiosensitivity effects, Rats, Response modifying factors, Time dependence.

For abstract, see NSA 28 05, number 11050.

ORO-3630-15/GA PC$3.00/MF$1.45
Texas Univ., Dallas (Usa). Inst. For Molecular Biology.
PHOTOREPAIR OF UV DAMAGE TO DNA: STUDIES WITH THE DNA-PHOTOREACTIVATING ENZYME. THREE YEAR SUMMARY, JANUARY 2, 1970--APRIL 31, 1973.
H. Werbin. 20p
Contract AT(40-1)-3630

Descriptors: (*Dna, Strand breaks), (*Strand breaks, *Photoreactivation), Biological repair, Chemical radiation effects, Enzymes, Photon beams, Ultraviolet radiation.

For abstract, see NSA 28 05, number 10984.

ORO-3630-16/GA PC$3.00/MF$1.45
Texas Univ., Dallas (Usa). Inst. For Molecular Biology.
PHOTOREPAIR OF UV DAMAGE TO DNA: PURIFICATION AND PROPERTIES OF THE DNA PHOTOLYASE (THE DNA-PHOTOREACTIVATING ENZYME). PROGRESS REPORT, JANUARY 2, 1972--APRIL 1973.
H. Werbin. 9p
Contract AT(40-1)-3630

Descriptors: (*Dna, Strand breaks), (*Strand breaks, *Photoreactivation), Chemical bonds, Chemical radiation effects, Enzymes, Photon beams, Ultraviolet radiation.

For abstract, see NSA 28 05, number 10985.

ORO-3972-14/GA PC$3.25/MF$1.45
Oklahoma Univ., Oklahoma City (Usa). Dept. Of Microbiology and Immunology.
DEVELOPMENTAL APPROACH TO THE STUDY OF IMMUNOLOGIC TOLERANCE. PROGRESS REPORT, SEPTEMBER 1, 1972--AUGUST 31, 1973.
R. M. Hyde. 1973, 23p
Contract AT(40-1)-3792

Descriptors: (*Immunity, *Biological radiation effects), (*Graft-host reaction, *Radiosensitivity), (*Theophylline, *Biological effects), Actinomycin, Animal cells, Bone marrow, Females, Globulin-gamma, Lethal radiation dose, Males, Mice, Mitomycin, Photon beams, Puromycin, Response modifying factors, Sex, Thymus, Time dependence, Transplants, X radiation.

For abstract, see NSA 28 06, number 13073.

PU-2000-99/GA PC$3.00/MF$1.45
Purdue Univ., Lafayette, Ind. Dept. Of Biological Sciences.
LOW-LEVEL X IRRADIATION OF THE BRAIN DURING DEVELOPMENT: MORPHOLOGICAL, PHYSIOLOGICAL, AND BEHAVIORAL CONSEQUENCES. ANNUAL PROGRESS REPORT, SEPTEMBER 1, 1972--AUGUST 31, 1973.
J. Altman. 1973, 12p
Contract AT(11-1)-2000

Descriptors: (*Brain, *Low dose irradiation), (*Nerve cells, *Biological radiation effects), Behavior, Cerebellum, Electron microscopy, Morphological changes, Nervous system, Photon beams, Rats, X radiation.

For abstract, see NSA 28 05, number 11051.

RD/B/N-2587/GA PC$3.50/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
DEVELOPMENTS IN THE RADIATION DOSIMETRY OF BONE SEEKING RADIONUCLIDES WITH SPECIAL REFERENCE TO EXP 89 SR AND EXP 90 SR.
P. J. Darley. Jan 73, 30p
U.S. Sales Only.

Descriptors: (*Strontium 89, *Maximum permissible body burden), (*Strontium 90, Maximum permissible body burden), (*Bone tissues, *Radiation doses), Beta sources, Bone seekers, Dose limits, Dosimetry, Icrp, Radiation protection, Recommendations.

For abstract, see NSA 28 04, number 08492.

RFP-2054/GA PC$4.00/MF$1.45
Dow Chemical U.S.a., Golden, Colo. Rocky Flats Div.
ELECTRON DIFFRACTION STUDY OF PLUTONIUM OXIDE PARTICULATES IN DOG LYMPH TISSUE.
R. F. Hillyer, and G. E. Dagle. 15 Jun 73, 7p
Contract AT(29-1)-1106

Descriptors: (*Beagles, *Radionuclide kinetics), (*Plutonium oxides, *Electron diffraction), Electron microscopy, Lymphatic system, Tissues.

For abstract, see NSA 28 06, number 13100.

SLA-73-5371/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
EVALUATION OF PERSONNEL EXPOSURES IN A HIGH-ENERGY, HIGH-INTENSITY BETA-GAMMA FIELD.
B. L. O'Neal. 1972, 7p CONF-730603-4, CONF-730907-1

Descriptors: (*Gamma dosimetry, *Personnel dosimetry), (*Beta dosimetry, Personnel dosimetry), (*Skin, *Radiation doses), Crystalline lens, External irradiation, Eyes, Gonads, Personnel, Personnel, Photographic film dosemeters, Thermoluminescent dosemeters, Whole-body irradiation.

For abstract, see NSA 28 06, number 13041.

SRO-637-2/GA PC$6.50/MF$1.45
Georgia Univ., Tifton. Georgia Coastal Plain Experiment Station.
DEVELOPMENT OF NEW TECHNIQUES OF USING IRRADIATION IN THE GENETIC IMPROVEMENT OF WARM SEASON GRASSES AND ASSESSMENT OF THE GENETIC AND CYTOGENETIC EFFECTS. PROGRESS REPORT, AUGUST 1, 1972--APRIL 30, 1973.
G. W. Burton, and W. W. Hanna. 1973, 88p
Contract AT(38-1)-637

Descriptors: (*Chromosomal aberrations, *Radioinduction), (*Mutations, Radioinduction), (*Maize, *Genetic radiation effects), (*Sorghum, Genetic radiation effects), Agriculture, Biological radiation effects, Cytoplasm, Economics, Ems, Forage, Gamma radiation, Genetic variability, Genetics, Grass, Hybridization, Millet, Mutants, Photon beams, Plant breeding, Seeds, Temperature dependence, Thermal neutrons.

For abstract, see NSA 28 05, number 11001.

TID-26345/GA PC$6.25/MF$1.45
Tennessee Univ., Knoxville.
STUDY OF THE STATISTICAL DISTRIBUTION OF COLONY COUNTS IN THE SPLEEN COLONY ASSAY FOR HEMOPOIETIC COLONY-FORMING CELLS.
K. L. Mossman. Aug 73, 82p

Descriptors: (*Bone marrow cells, Cfu), (*Cfu, *Statistics), (*Spleen, Cfu), Biological radiation effects, Cell proliferation, Distribution, Hematopoietic system, Mice, Photon beams, Stem cells, Transplants, X radiation.

For abstract, see NSA 28 05, number 11052.

UR-3490-319/GA PC$12.75/MF$1.45
Rochester Univ., N. Y. Dept. Of Radiation Biology and Biophysics.

INFLUENCE OF X IRRADIATION ON EXPERIMENTAL AUTOALLERGIC SIALADENITIS.
S. C. White. 1973, 214p

Descriptors: (*Inflammation, *Biological radiation effects), (*Salivary glands, Biological radiation effects), (*Neck, Biological radiation effects), (*Vaccines, *Radiosensitivity effects), Allergy, Amino acids, Diseases, Freunds adjuvant, Growth, Hexanoic acid, Immune reactions, Immunity, Leukocytes, Lymphocytes, Monocytes, Pathology, Photon beams, Rats, Response modifying factors, Thymus, Weight, X radiation.

For abstract, see NSA 28 05, number 11053.

UR-3490-321/GA PC$5.45/MF$1.45
Rochester Univ., N. Y. Atomic Energy Project.
BRIEF DESCRIPTION OF RESEARCH PAPERS ACCEPTED FOR PUBLICATION DURING 1972. ANNUAL REPORT.
W. F. Neuman. 15 May 73, 95p
Contract AT(11-1)-3490

Descriptors: (*Radiobiology, *Bibliographies), (*Radionuclide kinetics, Bibliographies), (*Biological radiation effects, Bibliographies), Aerosols, Cell membranes, Genetics, Inhalation, Metabolism, Minerals, Toxicity.

For abstract, see NSA 28 06, number 13101.

6S. Stress Physiology

AD-767 722/2GA PC$5.25/MF$1.45
Union Carbide Research Inst Tarrytown N Y
FORMULATION OF EXCURSION PROCEDURES FOR SHALLOW UNDERSEA HABITATS.
Final rept.,
Robert W. Hamilton, Jr., David J. Kenyon, Mark Freitag, and Heinz R. Schreiner. 31 Jul 73, 191p* Rept no. UCRI-731
Contracts N00014-69-C-0346, C-2-35479
Sponsored in part by Contract N00014-69-C-0405.

Descriptors: (*Stress(Physiology), Diving), (*Decompression, Diving), Shallow water, Nitrogen, Oxygen, Decompression sickness.
Identifiers: *Undersea habitats, Hyperbaric atmospheres, Decompression schedules, Narcosis.

Reported are operational experiments for developing and refining procedures for working from a shallow habitat. The program was to construct a matrix of ascent-limiting M-values based on several hundred diversified dive logs, to compute no-stop excursion limits for various times and depths, (both ascending and descending), and to verify the resulting tables. The authors devised an efficient method for extracting and utilizing data from previous dives, using a combination of computer and manual methods. Tables were computed using the new matrix and decompression model which in this case comprises 11 gas loading compartments; the longest limiting half-time used was 480 minutes. Extensive physiological experimentation and medical surveillance was conducted. Among the findings was the demonstration that habituation at 90 fsw provides relief from narcosis when subjects are subsequently exposed to 250 fsw of air. (Modified author abstract)

AD-767 862/6GA Not available NTIS
Defence and Civil Inst of Environmental Medicine Downsview (Ontario)
CANADIAN DIVING DATA: A COMPUTERIZED DECOMPRESSION DATA BANK,
L. A. Kuehn, and D. M. C. Sweeney. Oct 72, 16p Rept no. DCIEM-RP-886
Availability: Pub. in the Computers and Biomedical Research, v6 p266-280 1973.

Descriptors: (*Diving, Decompression), (*Decompression, *Information retrieval), Computers, Data processing systems, Stress(Physiology), Decompression sickness, High-pressure research, Models(Simulations), Canada.
Identifiers: *Biomedical information systems, Hyperbaric atmosphere, Hyperbaric medicine.

The study of decompression sickness is of major concern at various hyperbaric laboratories throughout the world. Although many data pertinent to decompression exist in various laboratories, few are circulated in any consistent format in the open literature. The development of an adequate decompression model that is suitable not only for shallow-depth short-time excursions but also for deep lengthy exposures requires the application of computer techniques and storage facilities. This computer methodology will make possible an efficient review of all pertinent data which in turn will lead to a better appreciation and elucidation of the important physiological parameters relevant to decompression sickness. Such an approach has rpven successful in the collation and analysis of medical statistics. The report describes the development and use of such a computerized system to store, collate, and evaluate an extensive body of decompression information collected at the Defence and Civil Institute of Environmental Medicine (DCIEM). The system is known as Canadian Diving Data and is referred to by the acronym CANDID.

AD-767 904/6GA PC$4.50/MF$1.45
Payne Inc Annapolis Md
A STATISTICAL STUDY OF GRIP RETENTION FORCE.
Final rept. 30 Jun 71-2 Mar 73,
Theodore W. Horner, and Fred W. Hawker. May 73, 47p Rept no. Working Paper-101-11 AMRL-TR-72-110
Contract F33615-71-C-1892

Descriptors: (*Arms, Force(Mechanics)), (*Ejection seats, *Human engineering), Pilots, Ejection, Jet planes, Probability, Aviation injuries, Design, Standards.

To assess an ejection seat occupant's ability to hold on to a handle the data from the two-handed force retention capability tests of Garrett, Alexander and Bennett are analyzed to produce curves of probability of letting go as a function of force. Two curves are produced; one for double grip handles, comprising a T-Bar and a Twin Grip; and one for Rings, comprising a flexible loop and the familiar, rigid D-Ring. It is concluded that, at the force levels experienced in most present-day ejections, which occur at low and moderate air speeds, the probability of letting go a ring is an order of magnitude greater than for a double grip handle. It is concluded that handle design strongly influences the probability of letting go, and therefore the probability of arm flail injury. (Author)

AD-768 215/6GA PC$2.75/MF$1.45
Human Factors Research Inc Goleta Calif
MOTION SICKNESS INCIDENCE AS A FUNCTION OF THE FREQUENCY AND ACCELERATION OF VERTICAL SINUSOIDAL MOTION.
Technical rept. 1 Jul 72-30 Jun 73,
James F. O'Hanlon, and Michael E. McCauley.
Sep 73, 22p Rept no. 1733-1
Contract N00014-73-C-0040

Descriptors: (*Motion sickness, *Acceleration tolerance), (*Human engineering, Motion sickness), Frequency, Stress(Physiology), Vehicles, Transportation.
Identifiers: Vertical motion.

Fourteen experimental conditions of vertical sinusoidal motion were defined by combinations of wave frequency and acceleration level in a partial factorial design. The frequency range investigated was from 5 cycles per minute (CPM, or .083 Hz) to 30 CPM (.500 Hz), and the average acceleration over each half-wave cycle ranged from about .03 to .40 g. Independent groups of 20 or more male Ss were exposed for 2 hours or until they began to vomit, whichever came first. Motion sickness incidence (MSI), defined as the percentage of Ss experiencing vomiting, was greatest at a frequency of 10 CPM (.167 Hz). For all wave frequencies, MSI increased as a monotonic function of the acceleration level. A mathematical model was derived from the data, and the implications for underlying physiological mechanisms and for transportation vehicle design were discussed. (Author)

AD-768 314/7GA PC$3.25/MF$1.45
Naval Submarine Medical Research Lab Groton Conn
DIFFUSIONAL AND METABOLIC COMPONENTS OF NITROGEN ELIMINATION THROUGH THE LUNGS: EFFECT OF PRESSURE.
Medical research progress rept. no. 7,
K. Muysers, G. V. Nieding, H. Krekeler, K. E. Schaefer, and U. Smidt. 19 Jan 73, 24p Rept no. NSMRL-736

Descriptors: (*Nitrogen, Excretion), Lungs, Metabolism, Diffusion, Respiration, Barometric pressure, Diving, Decompression.
Identifiers: Hyperbaric atmospheres.

The contribution of cutaneous diffusion of atmospheric nitrogen to pulmonary nitrogen elimination was determined by mass spectrometric analysis. In short-term experiments, subjects were enclosed in gas-tight bags containing helium, O2, N2 or air while breathing room air. Moreover, 24-hour studies of nitrogen elimination were carried out in a pressure chamber in which the ambient gas composition as well as the total pressure was varied. A linear relationship between ambient PN2 and nitrogen elimination through the lungs was established. At zero PN2 ambient elimination was present after 18 hours and amounted to 0.5 ml/mn. This is considered the metabolic component of gaseous nitrogen excretion. Although this amount appears very small, it can account for the frequenctly found deficit between nitrogen intake in food and nitrogen elimination via urine and faeces. Mass spectrometric analysis of ambient and expired air samples collected during three saturation-excursion diving experiments showed in all seven subjects cyclic variations in the ratio of expired/inspired nitrogen while the simultaneously measured respiratory quotient remained constant. Whether these delayed nitrogen excretions are due to release of nitrogen from pools in poorly perfused tissues or altered metabolic processes cannot be stated at this time. (Author)

N73-29041/3GA PC$3.00/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
GENERAL REGULARITIES OF THE REACTION OF THE HUMAN ORGANISM TO THE COMBINED INFLUENCE OF ENVIRONMENTAL FACTORS CHARACTERISTIC FOR A SPACECRAFT CABIN.
A. V. Lebedinskiy, S. V. Lebinskiy, and Y. G. Nefedov. Aug 73, 17p NASA-TT-F-15020
Contract NASW-2481
Tran-Transl. Into English from "Obshchiye Zakonomernosti Reaktsiy Organizma Cheloveka NA Kompleksnoye Vozdeystviye Faktorov Sredy, Kharakternoy Dlya Kabiny Kosmicheskikh Letatel'Nykh Apparatov".

Descriptors: *Human reactions, *Spacecraft cabins, Metabolism, Stress (Physiology).

For abstract, see STAR 1120

N73-29048/8GA PC$3.00/MF$1.45
National Aeronautics and Space Administration, Washington, D.C.
INVESTIGATION OF THE RHYTHM OF SLEEP AND WAKEFULNESS IN CREWS OF THE SPACESHIPS SOYUZ 3-9 BEFORE, DURING AND AFTER EXPOSURE TO SPACEFLIGHT.
A. M. Litsov. Sep 73, 16p NASA-TT-F-15103

Tran-Transl. Into English from Izd. Akad. Nauk Sssr, Ser. Biol. (Moscow), No. 6, Nov.-Dec. 1972 p 836-845.

Descriptors: *Circadian rhythms, *Sleep, *Soyuz spacecraft, *Space flight stress, *Wakefulness, Astronaut performance, Postflight analysis, Preflight analysis, Weightlessness.

For abstract, see STAR 1120

N73-29056/1GA PC$4.25/MF$1.45
Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario).
A STUDY OF ENERGY EXPENDITURE, DEHYDRATION AND HEALTH IN CANADIAN TROOPS DURING A SPRING EXERCISE IN THE SUBARCTIC: EXERCISE NORTHERN RAMBLE.
J. E. M. St.Rose, C. L. Allen, W. S. Myles, B. H. Sabiston, and T. E. Brown. Sep 72, 42p DCIEM-882

Descriptors: *Human performance, *Physical exercise, *Physiological effects, *Subarctic regions, Armed forces (Foreign), Canada, Heart rate, Respiratory reflexes.

For abstract, see STAR 1120

6T. Toxicology

AD-767 761/8GA PC$2.75/MF$1.45
Army Environmental Hygiene Agency Aberdeen Proving Ground Md
PRIMARY IRRITATION EVALUATION PROGRAM STUDY,
Jonathan Briel. 25 Jun 73, 7p Rept no. USAEHA-51-097-73/74
See also AD-767 762.

Descriptors: (*Insect repellents, *Toxicity), Skin, Irritating agents, Biological assay, Rabbits, Humans.

ENT 70483-Ga (Glidden-Durkee GD-783, commercially discrete structure), a candidate repellent, was evaluated on New Zealand White rabbits for its potential to cause skin irritation. The data obtained serves as a basis for making a recommendation concerning its potential use on humans. This recommendation is intended only for guidance in further entomological testing of this compound. Based upon the interpretation of this test, ENT 70483-Ga should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant. If the compound might come in contact with abraded skin, a prophetic patch test should be conducted on human skin to determine primary irritation potential. (Author)

AD-767 762/8GA PC$2.75/MF$1.45
Army Environmental Hygiene Agency Aberdeen Proving Ground Md
PRIMARY IRRITATION EVALUATION PROGRAM STUDY.
Final rept.,
Jonathan Briel, and John Malloy. 9 Jul 73, 7p Rept nos. USAEHA-51-001-74, USAEHA-51-002-74
Also includes Rept. no. USAEHA-51-003-74. See also AD-767 761.

Descriptors: (*Insect repellents, *Toxicity), (*Pyridines, Insect repellents), Skin, Irritating agents, Biological assay, Humans, Rabbits, Organic sulfur compounds.
Identifiers: Pyridine/butylsulfonyl-tetrahydro, Pyridine/ethylsulfonyl-tetrahydro, Pyridine/propylsulfonyl-tetrahydro.

1-(Butylsulfonyl)-1,2,3,6-tetrahydropyridine (ENT 35898-Ga), 1,2,3,6-tetrahydro-1-(propylsulfonyl) pyridine (ENT 35899-Ga) and 1-(ethylsulfonyl)-1,2,3,6-tetrahydropyridine (ENT 35900-Ga) which are candidate repellents, were evaluated on New Zealand White rabbits for their potential to cause skin irritation. The data obtained serve as a basis for making a recommendation concerning their potential use on humans. This recommendation is intended only for guidance in further entomological testing of these compounds and does not constitute approval for testing on volunteers. (Author)

COM-73-11508/1GA Reprint
Oregon State Univ., Astoria. Seafoods Lab.
KINETICS OF TRANSPLACENTAL MOVEMENT OF MERCURY FED IN A TUNA MATRIX TO MICE,
Ernest A. Childs. 30 Jan 73, 4p NOAA-73082808
Grant NOAA-043-158-4
Also pub. as Oregon State Univ., Corvallis. Agricultural Experiment Station, Technical Paper-3473 Revision of report dated 13 Nov 72.
Pub. in Archives of Environmental Health, v27 p50-52 Jul 73.

Descriptors: (*Mercury(Metals), *Pregnancy), Toxicology, Diet, Embryos, Placenta, Mice, Experimental data.
Identifiers: Sea Grant program, *Transplacental movement.

The rate of accumulation and final net content of mercury in pregnant female mice was proportional to the level of mercury in the diet. The concentration of mercury in fetuses was also proportional to the maternal diet level. Although thefetus may contain up to twice the mother's concentration of mercury at diet levels less than or equal to 0.005 ppm, the maternal load was greater at diet levels greater than or equal to 0.05 ppm.

COM-73-11618/8GA Reprint
National Marine Fisheries Service, College Park, Md. Fishery Products Technology Lab.
THE COMPARATIVE EFFECT OF ORAL INGESTION OF METHYL MERCURY ON CHICKS AND RATS,
J. H. Soares, Jr., David Miller, H. Lagally, B. R. Stillings, and P. Bauersfeld. 25 May 72, 9p NOAA-73082906
Pub. in Poultry Science, v52 n2 p452-458 Mar 73.

Descriptors: (*Fish protein concentrates, Mercury(Metal)), (*Toxicology, Mercury(Metal)), Physiology, Chickens, Rats, Ingestion(Biology), Experimental data, Toxicity, Accumulation, Tissues, Diet, Contamination, Feeding stuffs.
Identifiers: *Mercury/methyl.

Data show that feeding fish protein concentrate animal protein (Fish meal) containing higher than normal levels of mercury did not result in the concentration of mercury in poultry tissues that exceeded FDA guideline levels. After 7 weeks of mercury exposure chicks retained an average of 63% of the mercury consumed. During a 21-day depletion period, chicks excreted an average of 0.66% of the total body burden of mercury per day. Thus biological half-lives can be calculated to average about 97 days for all dietary levels. Rats fed diets containing 16 ppm mercury did not show outward signs of toxicity until the 6th week of treatment. After 12 weeks of mercury exposure, the total mercury dose was 84 mg./kg. body weight. None of the rats receiving lower levels of mercury showed symptoms of toxicity. Liver and brain mercury levels in rats fed 16 ppm mercury averaged 26 and 12 ppm, respectively. Male rats generally had higher tissue levels of mercury than females. In general, rats tolerated the highest level of dietary methyl mercury for a longer period of time than chicks which consumed three times as much mercury and deposited less mercury in their tissues. (Modified author abstract)

ORNL-TIRC-73-10/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY OF DL-MANDELIC ACID IN ANIMALS: A BIBLIOGRAPHY,
Martha Gerrard. May 73, 12p* TIP-73-111-1133
Contract W7405-eng-26

Descriptors: (*Organic acids, *Toxicity), (*Disinfectants, Toxicity), Bibliographies, Metabolism, Humans, Animals, Biological assay.
Identifiers: *Mandelic acid.

Both intact-animal studies and cell-culture studies were considered in the search that recovered 28 citations on mandelic acid toxicity. Because the number of references to the toxicity of mandelic acid and its salts (organic derivatives and esters were excluded) are few, a number of physiological effects were included even though they may not be toxic. Also a few references on other forms than DL were included. Effects on bacteria were excluded, but acidifying effects and production as metabolites in the animal body were considered pertinent.

ORNL-TIRC-73-12/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY AND METABOLISM BHA (2 AND 3-TERT-BUTYL-4 HYDROXYANISOLE): A BIBLIOGRAPHY,
Florence Holland. May 73, 15p* TIP-73-99-1121
Contract W7405-eng-26

Descriptors: (*Anisole, Toxicity), (*Antioxidants, *Toxicity), (*Food additives, Toxicity), (*Bibliographies, Antioxidants), Metabolism.

The Toxicology Information Response Center, in answer to a specific request, has prepared a bibliography of 81 selected references on the toxicity and metabolism of an antioxidant, 2 and 3 tert-butyl-4 hydroxyanisole(BHA). From a review of the literature of 1947 through early 1973, citations spanning the years 1948 to 1972 were retrieved. References are listed by year in alphabetical order by the first author's last name.

ORNL-TIRC-73-14/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY AND ADVERSE EFFECTS OF RDX: AN ANNOTATED BIBLIOGRAPHY,
Kathy C. Miller. Jun 73, 10p* TIP-73-168-1190
Contract W7405-eng-26

Descriptors: (*RDX, *Toxicity), (*Explosives, Toxicity), (*Bibliographies, RDX), Humans, Animals, Biological assay, Ordnance.

The annotated bibliography, containing 20 references, was prepared by the Toxicology Information Response Center in answer to a specific query. The citations, concerning the toxicity of RDX (cyclotrimethylenetrinitramine; cyclonite; Hexogen; T4), are divided into two sections, secondary and primary references, each arranged by year in alphabetical order by the first author's last name. The sources searched covered a seven-year time period, from 1965 through May 1973.

ORNL-TIRC-73-15/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY AND ADVERSE EFFECTS OF TRINITROTOLUENE (TNT): A PARTIALLY ANNOTATED BIBLIOGRAPHY,
Kathy C. Miller. Jun 73, 19p* TIP-73-169-1191
Contract W7405-eng-26

Descriptors: (*Trinitrotoluene, *Toxicity), (*Explosives, Toxicity), (*Bibliographies, Trinitrotoluene), Physiology, Industrial hygiene, Environments, Industrial wastes, Ordnance.

The partially annotated bibliography, containing 71 references, was prepared by the Toxicology Information Response Center in response to a

specific request. The citations are divided into two sections, secondary and primary references, each arranged by year in alphabetical order by the first author's last name. The sources searched covered a seven-year time period, from 1965 through May 1973. Physiologic and toxicologic effects of TNT, incidences of industrial exposure, and a few articles on environmental impact and waste effluent treatments following TNT manufacture are included.

ORNL-TIRC-73-16/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY AND ADVERSE EFFECTS OF AMMONIUM PICRATE: AN ANNOTATED BIBLIOGRAPHY,
Kathy C. Miller. Jun 73, 12p* TIP-73-170-1192
Contract W7405-eng-26

Descriptors: (*Ammonium picrates, *Toxicity), (*Explosives, Toxicity), (*Bibliographies, Ammonium picrates), Ordnance, Picric acid, Physiology.

The annotated bibliography, containing 18 references, was prepared by the Toxicology Information Response Center in response to a specific query. The citations are divided into two sections, secondary and primary references, each arranged by year in alphabetical order by the first author's last name. The sources searched covered a seven-year time period, from 1965 through May 1973. Physiologic and toxicologic effects of picric acid are also included.

ORNL-TIRC-73-17/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY ADVERSE EFFECTS, AND ENVIRONMENTAL CONTROL OF ORDNANCE EXPLOSIVE COMPOUNDS: A BIBLIOGRAPHY,
Kathy C. Miller. Jun 73, 15p* TIP-73-200-1222
Contract W7405-eng-26

Descriptors: (*Explosives, *Toxicity), (*Pollution, Explosives), (*Bibliographies, Explosives), Environments, Control, Ordnance.

The bibliography, containing 71 references, was prepared by the Toxicology Information Response Center in reply to a specific query. The citations are divided into three sections, secondary, primary, and environmental control references, each arranged by year in alphabetical order by the first author's last name. The sources searched covered a seven-year time span, from 1965 through May 1973.

ORNL-TIRC-73-2/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY OF TRIS(2,3-DIBROMOPROPYL) PHOSPHATE AND TRIS(2,3-DICHLOROPROPYL) PHOSPHATE: A BIBLIOGRAPHY,
Kathy C. Miller. May 73, 9p* TIP-73-149-1171
Contract W7405-eng-26

Descriptors: (*Phosphorus organic acid esters, *Toxicity), (*Bibliographies, Phosphorus organic acid esters), Halogenated organic compounds, Fire resistant coatings.

The bibliography, containing 17 references, was prepared by the Toxicology Information Response Center in reply to a specific request. The citations are divided into three sections: toxicity of the title compounds; general toxicity of organic phosphoric acid esters and halogenated flame retardants; and manufacturer's reference data sheets. The general toxicity section is further subdivided into secondary and primary references, each arranged by year and alphabetically by first author within each year. The sources searched covered a sixty-six-year time span, from 1907 through May 1973.

ORNL-TIRC-73-3/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY OF ZINC PHOSPHORODITHIOATES: A BIBLIOGRAPHY,
Kathy C. Miller. May 73, 9p* TIP-73-150-1172
Contract W7405-eng-26

Descriptors: (*Phosphorus organic acid esters, *Toxicity), (*Zinc organic compounds, Toxicity), (*Lubricant additives, Toxicity), (*Bibliographies, Zinc organic compounds), Chemical analysis.

The bibliography, containing 19 references, was prepared by the Toxicology Information Response Center in reply to a specific request. The citations are divided into two sections: general toxicity of zinc organic compounds, phosphorodithioates, and lubricating oil additives; and analytical methods for zinc phosphorodithioates. The general toxicity section is further subdivided into secondary and primary references, each arranged by year in alphabetical order by the first author's last name. The sources searched covered a sixty-six-year time span, from 1907 through May 1973.

ORNL-TIRC-73-5/GA PC$7.00/MF$7.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXIC EFFECTS OF BEE AND WASPS VENOMS: A BIBLIOGRAPHY,
Helga B. Gerstner. Apr 73, 22p* TIP-73-24-1046
Contract W7405-eng-26

Descriptors: (*Venoms, *Toxicity), (*Hymenopters, Venoms), (*Bees, Venoms), Insect stings.

The bibliography of 173 selected reference on toxic effects of bee and wasp venoms was compiled by the Toxicology Information Response Center in answer to a specific request. Coverage of the abstract literature spans the years 1962 to 1973 and citations retrieved range from 1960 to 1973. These are arranged chronologically by year and alphabetically by author within each year.

ORNL-TIRC-73-7/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology, Information Response Center.
TOXICOLOGY AND ENVIRONMENTAL EFFECTS OF POLYCHLORINATED TERPHENYLS: A BIBLIOGRAPHY,
Helga B. Gerstner. Apr 73, 10p* TIP-73-107-1129
Contract W7405-eng-26

Descriptors: (*Terphenyls, *Toxicology), (*Ecology, Terphenyls), (*Bibliographies, Terphenyls), Environments, Pollution.

The bibliography of 32 selected references on the toxicology and environmental effects of polychlorinated terphenyls was compiled by the Toxicology Information Response Center in answer to a specific request. Coverage of the abstract literature spans the years 1962 to 1973, and citations retrieved range from 1959 to 1973. These are arranged chronologically by year and alphabetically by author within each year.

ORNL-TIRC-73-8/GA PC$5.00/MF$5.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY OF EUGENOL: AN ANNOTATED BIBLIOGRAPHY,
Helga B. Gerstner. May 73, 15p* TIP-73-108-1130
Contract W7405-eng-26

Descriptors: (*Disinfectants, *Toxicity), (*Analgesics, Toxicity), Dentistry, Bibliographies.
Identifiers: *Eugenol.

The annotated bibliography of 54 selected references on the toxicology of eugenol was compiled by the Toxicology Information Response Center in answer to a specific request. Coverage of the abstract literature spanned the years 1925 to 1973 and yielded citations from 1932 to 1972. Only citations from English language journals are included and these are arranged chronologically by year and alphabetically by first author within each year.

ORNL-TIRC-73-9/GA PC$7.00/MF$7.00
Oak Ridge National Lab., Tenn. Toxicology Information Response Center.
TOXICITY OF POTATOES: A BIBLIOGRAPHY,
Helen S. Warren. Feb 73, 59p* TIP-1010
Contract W7405-eng-26

Descriptors: (*Potatoes, *Toxicity), (*Anencephaly, Potatoes), (*Spina bifida, Potatoes), (*Congenital abnormalities, Potatoes), Epidemiology, Etiology, CNS disorders, Food consumption, Plant diseases, Bibliographies, Steroids, Alkaloids.
Identifiers: Teratology.

The bibliography in ten parts, comprising a total of 522 references, was prepared by the Toxicology Information Response Center in reply to a specific request. It is concerned with a hypothetical relationship between steroid alkaloids in blighted potatoes and the epidemiology of anencephalus and spina bifida. The references were selected from the literature of 1962 to 1972, and cover the following aspects: Anencephaly and spina bifida; early and late blights of potatoes; phytoalexins; steroid alkaloids; marmosets; potato consumption; solanine; solanidine; rishitin; and phytuberin. References are arranged within each section in descending chronological order and alphabetized within each year.

7. CHEMISTRY

7A. Chemical Engineering

AD-767 902/0GA PC$4.25/MF$1.45
Illinois State Water Survey Urbana
SILICATE TREATMENT TO INHIBIT CORROSION OF HOT, POTABLE WATER SYSTEMS.
Technical rept. on Phase 2, Jan 71-Apr 73,
R. W. Lane, C. H. Neff, and S. W. Schilsky. Sep 73, 110p* AFWL-TR-73-84
Contract F29601-69-C-0071

Descriptors: (*Silicates, *Corrosion inhibition), (*Pipes, Corrosion inhibition), (*Stainless steel, *Corrosion resistance), (*Copper alloys, Corrosion resistance), Phosphates, Zinc compounds, pH, Tannic acids.
Identifiers: Alkalinity, Water hardness.

In the second phase of the study to determine effective chemical treatment to inhibit corrosion of metals in domestic hot water systems, it was concluded that sodium silicate treatment is still the best means of inhibiting corrosion of galvanized steel, copper, and copper nickel in 140F and 180F systems. Further testing was deemed necessary to determine whether tannin or zinc ion will improve the inhibition by silicate treatment. Zinc polyphosphate and zinc-phosphate formulations were found to be effective in reducing the corrosion of copper base metals. Systematic investigation of the variables (pH, treatment levels and water constituents) was considered necessary to determine the optimal pH and inhibiting treatment concentrations for a particular water quality. (Author)

AD-768 144/8GA PC$5.25/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
HYDROCARBON RECOVERY FROM AUTOMOTIVE EXHAUST,
Gilbert A. Hays. Jul 71, 64p Rept no. USAMC-ITC-2-71-05

Descriptors: (*Internal combustion engines, Exhaust gases), (*Exhaust gases, *Passenger vehicles), (*Air pollution, Internal combustion engines), Catalysts, Nitrogen oxides, Carbon monoxide, Recovery.
Identifiers: *Air pollution control equipment, Spark ignition engines, *Automobile exhaust, Catalytic reactors(Exhaust systems).

The paper is concerned with the air pollution problem as it relates to the Otto-cycle engine and the vehicles powered by this type engine. Specifically, this paper deals with the control of the three major air pollutants emitted by the automobile. It discusses the automobile as a source of pollution and the efforts that have been and are being made to control the emission of pollutants. The author proposes a new exhaust control system that is based on viewing the pollution problem as a wasted resource problem and discusses the possible difficulties that the proposed control system will encounter.

AD-768 219/8GA PC$8.25/MF$1.45
Hercules Inc Kenvil N J
PROCESS ENGINEERING DESIGN FOR MANUFACTURE OF GUANIDINE NITRATE. VOLUME I.
Final rept.,
N. W. Steele, J. A. Doyle, and M. G. Whippen.
Aug 73, 401p*
Contract DAAA21-71-C-0193
See also Volume 2, AD-768 220.

Descriptors: (*Guanidine nitrates, Production), Urea, Ammonium compounds, Nitrates, Synthesis(Chemistry), Pilot plants, Catalysts, Poisoning, Processing, Nitroguanidine, Design, Construction, Safety, Mathematical models, Explosive materials, Silicon dioxide, Reaction kinetics.
Identifiers: Chemical reactors, Beds(Process engineering), Ammonium nitrate, Chemical plants, Flow charts, Process charting, Packed bed reactors, Poisoning(Catalysts), Engineering diagrams, Performance evaluation.

The object of this program was to develop design data and produce 40,500 lb of guanidine nitrate (GN) via the catalytic reaction of ammonium nitrate (AN) and urea. Laboratory and pilot plant experiments confirmed the soundness of the process as described in the literature. Mathematical models and computer programs developed on the basis of laboratory kinetic and process variable data proved to be fully capable in predicting the behavior of packed bed tubular reactors. A semi-continuous pilot plant (nomial capacity of 50 lb GN/hr) was constructed on the basis of laboratory data. About one ton of 96+% purity GN was produced using a single aqueous crystallization step for product recovery. Total production was not met because of catalyst poisoning, which was traced to phosphates and perhaps borates in commercial grade AN. Sensitivity and hazards analyses show that no in-process material is capable of self-propagation. Preliminary economic studies indicate cost advantages over the British aqueous fusion process. Continuation of pilot plant operations to extend catalyst mileage data, particularly with recycle, and more detailed cost analysis are recommended. (Modified author abstract)

AD-768 220/6GA PC$4.75/MF$1.45
Hercules Inc Kenvil N J
PROCESS ENGINEERING DESIGN FOR MANUFACTURE OF GUANIDINE NITRATE. VOLUME II. APPENDICES.
Final rept.,
N. W. Steele, J. A. Doyle, and M. G. Whippen.
Aug 73, 169p*
Contract DAAA21-71-C-0193
See also Volume 1, AD-768 219.

Descriptors: (*Guanidine nitrates, Production), Processing, Mathematical models, Reviews, Catalysts, Poisoning, Safety, Computer programs, Pilot plants, Numerical analysis, Chemical reactions, Synthesis(Chemistry), Costs, Explosive materials, Data, Experimental data, Urea, Ammonium compounds, Nitrates.
Identifiers: Poisoning(Catalysts), *Packed bed reactors, Stirring, Cost analysis, Chemical reactors, Performance evaluation, Chemical plants, Ammonium nitrate.

The document contains appendices for a report on development of design data and a pilot plant for production of guanidine nitrate. It includes data and data processing programs relative to various process specifications, pilot plant operation, and catalyst poisoning research, safety engineering reports, and a literature search on guanidine nitrate production from urea.

BNWL-SA-4525/GA PC$3.00/MF$1.45
Battelle-Northwest, Richland, Wash. Pacific Northwest Lab.
METHODS FOR REDUCING DEMINERALIZER WASTE DISCHARGES FROM THERMO-ELECTRIC POWER PLANTS.
B. W. Mercer, and R. T. Jaske. 25 Apr 73, 14p
CONF-730433-3

Descriptors: (*Demineralizers, *Waste processing), (*Hydroelectric power plants, Waste processing), Ion exchange, Waste disposal.

For abstract, see NSA 28 05, number 10906.

CONF-730904-3/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
APPLICATION OF DYNAMIC MEMBRANES TO DESALINATION OF BRACKISH WATER.
D. G. Thomas. 1973, 11p

Descriptors: (*Seawater, *Desalination), Membranes, Pilot plants, Polyacrylates, Zirconium oxides.

For abstract, see NSA 28 06, number 15134.

GAT-P-58/Thesis/GA PC$5.25/MF$1.45
Goodyear Atomic Corp., Piketon, Ohio.
AN OPTIMIZATION TECHNIQUE USED TO IMPROVE OPERATION OF A URANIUM--FLUORINE REACTION TOWER.
J. W. Doman. 9 Jun 73, 64p
Contract AT(33-2)-1

Descriptors: (*Uranium hexafluoride, *Production), Chemical reactions, Economics, Fluorine, Uranium oxides.

For abstract, see NSA 28 06, number 12750.

IS-T-595/GA PC$5.00/MF$1.45
Ames Lab., Iowa.
ANALOG-DIGITAL SIMULATION OF PULSE COLUMN CONTROL CHARACTERISTICS.
A. M. Kelly. May 73, 59p
Contract W-7405-eng-82

Descriptors: (*Extraction columns, *On-line control systems), Computers.

For abstract, see NSA 28 05, number 10673.

JAERI-M-5057/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
PILOT PLANT FOR RADIATION-INDUCED, SOLID-STATE POLYMERIZATION OF TRIOXANE.
M. Sakamoto, K. Nishimura, A. Ito, T. Iwai, and G. Nakamura. Dec 72, 40p
In Japanese. U.S. Sales Only.

Descriptors: (*Trioxanes, *Chemical radiation effects), Electron beams, Pilot plants, Polymerization, Production, Radiation chemistry, Solids.

For abstract, see NSA 28 04, number 07945.

ORNL-TM-4037/GA PC$21.25/MF$1.45
Oak Ridge National Lab., Tenn.
MULTITUBE CONDENSER DATA TABULATION.
D. M. Eissenberg. Jun 73, 383p
Contract W-7405-eng-26

Descriptors: (*Steam condensers, *Operation), (*Computer codes, *C codes), Data, Desalination, Heat transfer.

For abstract, see NSA 28 04, number 10596.

ORNL-TM-4137/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.
SIO SUB 2 SCALE FORMATION IN SIMULATED GEOTHERMAL BRINE.
P. H. Harley. Jun 73, 21p
Contract W-7405-eng-26

Descriptors: (*Water, *Production), (*Brines, *Evaporation), (*Silicon oxides, *Scaling), Calcium, Ground water, Heat transfer, High temperature, Low temperature, Magnesium, Trace amounts.

For abstract, see NSA 28 06, number 15153.

ORNL-TM-4142/GA PC$6.25/MF$1.45
Oak Ridge National Lab., Tenn.
COST ESTIMATE FOR THE LIMESTONE WET SCRUBBING SULFUR OXIDE CONTROL PROCESS.
M. L. Meyers. Jul 73, 84p
Contract W-7405-eng-26

Descriptors: (*Sulfur oxides, Waste processing), (*Waste processing, *Gaseous wastes), Coal, Computer codes, Cost, Economics, Limestone, Petroleum, Power plants.

For abstract, see NSA 28 06, number 12886.

PAT-APPL-393 385/GA PC$3.00/MF$1.45
Department of the Interior, Washington, D.C.
RECOVERY OF SULFUR.
Patent Application,
Richard D. Baker. Filed 31 Aug 73, 4p
DOCKET/MIN-2165
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: (*Sulfur, *Materials recovery), Pyrolysis, Extraction, Residues, Leaching, Ammonium compounds, Inorganic sulfides.
Identifiers: Ammonium sulfide.

The patent describes the recovery of sulfur from leach residues by extraction with ammonium sulfide solution, followed by thermal decomposition of the pregnant solution to yield elemental sulfur.

PATENT-3 760 949/GA Not available NTIS
Department of the Interior, Washington, D.C.
SEALING MEANS FOR HOLLOW FIBER BUNDLES.
Patent,
Donald F. Carey, Richard L. Leonard, and Thomas A. Orofino. Filed 13 Aug 71, patented 25 Sep 73, 4p PAT-APPL-171 431, DOCKET/SAL-1839
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Osmosis, Membranes), (*Membranes, *Seals(Stoppers)), (*Patents, Seals(Stoppers)), Elastomers, Silicone resins, Sealing, Water treatment devices, Desalting.
Identifiers: PAT-CL-210-321, Reverse osmosis, Desalination, *Hollow fiber membranes.

The patent describes a method of providing a seal to retain the hollow fiber bundle in a reverse osmosis module. The invention provides means for sealing hollow fiber bundles which will withstand the

high pressure of operation of a reverse osmosis apparatus, and osmosis apparatus which is simple, economic and efficient.

PB-224 893/5GA PC$8.25/MF$1.45
Mason-Rust, Webster, S. Dak.
ANNUAL REPORT (FY 1973) WEBSTER TEST FACILITY MANAGEMENT, OPERATION AND MAINTENANCE WEBSTER TEST BED PLANT, WEBSTER, SOUTH DAKOTA.
Annual rept.,
R. A. Ackerman, D. R. Bogue, and J. E. Gugeler.
3 Jun 73, 125p Int-OSW-73-895
Contract DI-14-03-3106

Descriptors: (*Desalting, Osmosis), (*Osmosis, Pilot plants), (*Membranes, Osmosis), Brackish water, Brines, Performance evaluation, Sludge disposal, Fouling, Iron, Flushing, Flux(rate), Citric acid, Maintenance, Management, Operations.
Identifiers: *Hollow fiber membranes, *Spiral wound membranes, Reverse osmosis desalination, *Webster desalination plant, Tubular membranes, Electrodialysis.

This report covers the operation testing of (1) hollow fine fiber, (2) spiral wound, and (3) helical wound reverse osmosis pilot plants during FY 1973. The plants were operated at a set product to feed conversion ratio and at constant brine discharge rates to determine flux declination. The chief cause of flux decline was found to be iron. Various methods for controlling this condition, including citric acid, flushing and hexametaphosphate feed were studied. (Modified author abstract)

PB-224 202/2GA PC$4.75/MF$1.45
West Virginia Univ., Morgantown. Dept. of Chemical Engineering.
ABSORPTION OF SO2 BY ALKALINE SOLUTIONS IN VENTURI SCRUBBER SYSTEMS.
Final rept.,
C. Y. Wen, and S. Uchida. Jul 73, 170p* EPA-650/2-73-003
Contract EPA-71-20, Grant EPA-800781

Descriptors: (*Sulfur dioxide, *Oxidation), (*Air pollution, Sulfur dioxide), Calcium carbonates, Washing, Momentum transfer, Mathematical models, Mass transfer, Heat transfer, Flue gases, Calcium oxides, Sodium hydroxide, Scrubbers, Reaction kinetics, Flow rate, Pressure, Scaling, Oxidation, Slurries, Alkalies.
Identifiers: *Venturi separators, *Air pollution control, Chemical reaction mechanisms, *Limestone scrubbing, Alkaline scrubbing, Wet methods.

The report describes studies of SO2 absorption from flue gases by water and alkaline solutions in venturi scrubber processes, including recycle of the scrubbing liquor. It proposes mathematical models describing the process momentum, heat, and mass transfer for SO2-H2O, SO2-NaOH-H2O, SO2-CaO-H2O, and SO2-CaCO3-H2O systems. It generates equations relating total pressure, liquid velocity, SO2 concentration in the liquid. It solves these equations numerically for performance profiles, used to examine the effects of such operating variables as liquid flow rate and the concentration of alkali in the liquid phase on the absorption rate. It analyzes data from various size holding tanks and proposes mathematical models for the lime/limestone slurry process holding tanks. Finally, it combines these models to simulate the venturi/holding-tank system with closed-loop recycling of the liquor. It examines the sensitivities of such operating variables as the recycling liquor rate and the alkali makeup rate on the absorption. It qualitatively discusses such practical problems as oxidation of sulfite to sulfate and scaling of the solids. (Modified author abstract)

PB-224 277/4GA PC$4.75/MF$1.45
Hittman Associates, Inc., Columbia, Md.
VERTICAL TUBE DISTILLATION DESALTING STATE-OF-THE-ART (1971),
Robert Blevitt, and H. M. Curran. Nov 72, 152p*
HIT-524 INT-OSW-RDPR-73-896
Contract DI-14-01-001-1748

Descriptors: (*Desalting, Distillation), (*Distillation, Reviews), Industrial plants, Design, Distillation equipment, Heat transfer, Design criteria, Cost estimates, Performance evaluation, Cost engineering, Pipes(Tubes), Economic analysis, Fouling, Fouling prevention, Feedwater treatment, Materials estimates, Operations, Maintenance.
Identifiers: *Vertical tube evaporation, Multistage flash distillation, Falling film evaporation.

The state-of-the-art design, performance, and economics of downflow thin film vertical tube evaporator (VTE) desalting plants were analyzed and reviewed. Both single- and dual-purpose plants ranging in size from 1 to 250 MGD capacity were evaluated. Recent innovations include integration of multistage flash (MSF) preheaters with the VTE equipment yielding apparent economies in materials, fabrication, and operation. Current technology emphasizes the use of enhanced surfaces for improvement of evaporation/condensation heat transfer. Concrete lined steel appears to offer long term corrosion resistance to hot seawater brines. Current plants and designs yield from 0.75 to 0.85 pounds of product water per 1000 Btu (initial heating steam) per effect at concentration ratios of 2.5 to 3.0 . Two and three inch diameter evaporator tubes of Al-brass or 90-10 CuNi currently are the most attractive materials. VTE desalting plants are currently undergoing continuous improvements in process configuration, materials of construction, and fabrication technology. These improvements are expected to yield reductions in desalting costs. (Modified author abstract)

UCID-16265/GA PC$3.25/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
PRELIMINARY COAL GASIFICATION EXPERIMENTS.
A. Pasternak, R. W. Taylor, and D. Bowen. 11 May 73, 24p
Contract W-7405-eng-48

Descriptors: (*Coal, *Gasification), Activation energy, High temperature, Hydrogen, Methane, Steam, Time dependence, Wyoming.

For abstract, see NSA 28 06, number 15023.

7B. Inorganic Chemistry

AD-767 704/0GA PC$2.75/MF$1.45
Belfer Graduate School of Science New York
MODES OF REARRANGEMENT IN SUBSTITUTED OCTAHEDRAL COMPLEXES.
Technical rept.,
Jeremy I. Musher, and William C. Agosta. 4 Sep 73, 30p Rept no. TR-6
Contract N00014-68-A-0302-0005
Prepared in cooperation with Rockefeller Univ., New York. Sponsored in part by National Science Foundation, Washington, D.C.

Descriptors: (*Complex compounds, Stereochemistry), (*Metalorganic compounds, *Stereochemistry), Iron compounds, Chelate compounds, Phosphines, Molecular isomerism.
Identifiers: *Rearrangement reactions, Chemical reaction mechanisms.

The modes of rearrangement and the observable processes for octahedral dihydro-complexes containing no, one and two chelating rings are presented. The last of these can be used to indicate the actual rearrangement for such complexes when appropriate conditions regarding the effect of chelation are satisfied. The modes and observable processes for a square pyramidal molecule, an octahedral molecule containing a single lone-pair, are also presented. Some observations on related systems are developed. (Author)

CEA-CONF-2171/GA PC$3.00/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
LIQUID--VAPOR EQUILIBRIUM OF SEVERAL VOLATILE FLUORIDES IN MIXTURES WITH UF SUB 6 OR CLF SUB 3 .
M. M. Carles. 8p CONF-720987-1
In French. U.S. Sales Only.

Descriptors: (*Uranium hexafluoride, *Purification), (*Chlorine fluorides, *Vapor pressure), (*Molybdenum fluorides, Vapor pressure), (*Tungsten fluorides, Vapor pressure), Binary mixtures, Diagrams, Equilibrium, Liquids, Medium pressure, Vapors, Vanadium fluorides, Chlorinated aliphatic hydrocarbons, Fluorinated aliphatic hydrocarbons, Organic chlorine compounds, Organic fluorine compounds.

For abstract, see NSA 28 05, number 10741.

COM-73-11644/4GA PC$2.75/MF$1.45
Delaware Univ., Newark. Coll. of Marine Studies.
THE USE OF ION SPECIFIC ELECTRODES FOR CHEMICAL MONITORING OF MARINE SYSTEMS. PART I: THE AMMONIA ELECTRODE AS A SENSITIVE WATER QUALITY INDICATOR PROBE FOR RECIRCULATING MARICULTURE SYSTEMS,
Richard F. Srna, Charles Epifanio, Michael Hartman, Gary Pruder, and Ann Stubbs. Jun 73, 25p DEL-SG-14-73 NOAA-73091703
Contract NOAA-2-35223

Descriptors: (*Ammonia, *Water analysis), (*Electrodes, Water analysis), Water quality, Sea water, Performance evaluation, Aquaculture, Nitrites.
Identifiers: *Ion selective electrodes.

The purpose of this work is to evaluate the ammonia ion specific electrode within the framework of its value as a water quality probe in recirculating mariculture systems. The Orion 95-10 ammonia ion specific electrode was tested, evaluated, and characterized for use in monitoring water quality and biological activity in a closed cycle system. Its precision and ease of use make it possible for the ammonia level in the system to be monitored routinely and the ammonia concentration used as a master variable, to detect rapid system changes involving both physical and biological perturbations.

IJS-R-609/GA PC$3.00/MF$1.45
Institut Jozef Stefan, Ljubljana (Yugoslavia).
SOME REACTIONS OF CHROMIUM, IRON, AND COBALT FLUORIDES WITH XENON DIFLUORIDE AND HEXAFLUORIDE.
B. Zemva, and J. Slivnik. Oct 72, 7p CONF-720856-7
U.S. Sales Only.

Descriptors: (*Chromium fluorides, *Chemical reactions), (*Iron fluorides, Chemical reactions), (*Cobalt fluorides, Chemical reactions), (*Xenon fluorides, Chemical reactions), Complexes.

For abstract, see NSA 28 05, number 12551.

IJS-R-610/GA PC$3.00/MF$1.45
Institut Jozef Stefan, Ljubljana (Yugoslavia).
PREPARATION OF PURE XENON TETRAFLUORIDE.
M. Bohinc, J. Slivnik, and B. Zemva. Oct 72, 8p CONF-720856-1
U.S. Sales Only.

Descriptors: (*Xenon fluorides, *Purification), Cobalt fluorides, Complexes, Dissociation, Sodium fluorides.

For abstract, see NSA 28 05, number 12552.

IJS-R-611/GA PC$3.00/MF$1.45
Institut Jozef Stefan, Ljubljana (Yugoslavia).
REACTIONS OF MOLYBDENUM AND TUNGSTEN HEXAFLUORIDES WITH ANHYDROUS HYDRAZINE.
B. Frlec. Nov 72, 13p CONF-720856-2
U.S. Sales Only.

Descriptors: (*Hydrazine, *Chemical reactions), (*Tungsten fluorides, Chemical reactions), (*Molybdenum fluorides, Chemical reactions), (*Nitriles, Chemical reactions), Low temperature.

For abstract, see NSA 28 05, number 12553.

IJS-R-612/GA PC$3.00/MF$1.45
Institut Jozef Stefan, Ljubljana (Yugoslavia).
INVESTIGATIONS OF THE SYSTEMS BR SUB 2 --F SUB 2 --ASF SUB 5 AND BR SUB 2 --F SUB 2 --BF SUB 3 .
A. Smalc. Nov 72, 9p CONF-720856-5
U.S. Sales Only.

Descriptors: (*Bromine, *Chemical reactions), (*Fluorine, Chemical reactions), (*Arsenic fluorides, Chemical reactions), (*Boron fluorides, Chemical reactions), Bromine fluorides, Chemical reaction yield, Arsenic compounds, Boron compounds.

For abstract, see NSA 28 05, number 12554.

IJS-R-613/GA PC$3.00/MF$1.45
Institut Jozef Stefan, Ljubljana (Yugoslavia).
REACTION OF SOME TRANSITION METAL FLUORIDES WITH ANHYDROUS HYDRAZINE.
P. Glavic, and J. Slivnik. Nov 72, 12p CONF-720856-6
U.S. Sales Only.

Descriptors: (*Hydrazine, *Chemical reactions), (*Zirconium fluorides, Chemical reactions), (*Hafnium fluorides, Chemical reactions), (*Cerium fluorides, Chemical reactions), Cadmium fluorides, Differential thermal analysis, Infrared spectra, Manganese fluorides, Nickel fluorides, Thorium fluorides, Zinc fluorides.

For abstract, see NSA 28 05, number 12555.

IJS-R-614/GA PC$3.00/MF$1.45
Institut Jozef Stefan, Ljubljana (Yugoslavia).
MELTING POINT DETERMINATIONS OF XENON DIFLUORIDE--XENON TETRAFLUORIDE MIXTURES.
T. Ogrin, and M. Bohinc. Nov 72, 6p CONF-720856-4
U.S. Sales Only.

Descriptors: (*Xenon fluorides, *Melting points), Mixtures.

For abstract, see NSA 28 05, number 12556.

IJS-R-615/GA PC$3.00/MF$1.45
Institut Jozef Stefan, Ljubljana (Yugoslavia).
REACTION BETWEEN XENON AND FLUORINE.
J. Levec, J. Slivnik, and B. Zemva. Dec 72, 13p CONF-720856-3
U.S. Sales Only.

Descriptors: (*Xenon, *Chemical reactions), (*Fluorine, Chemical reactions), Catalysts, Manganese fluorides, Nickel fluorides, Silver fluorides, Silver oxides.

For abstract, see NSA 28 05, number 12557.

JAERI-1225/GA PC$5.45/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
ANALYSIS OF SODIUM.
Jan 73, 106p
In Japanese. U.S. Sales Only.

Descriptors: (*Sodium, *Chemical analysis), (*Oxygen, Chemical analysis), (*Carbon, Chemical analysis), (*Hydrogen, Chemical analysis), Aluminium, Boron, Cadmium, Calcium, Chlorine, Chromium, Cobalt, Impurities, Iron, Lithium, Magnesium, Manganese, Materials handling, Molybdenum, Nickel, Potassium, Quantitative chemical analysis, Reviews, Safety, Trace amounts, Uranium, Vanadium.

For abstract, see NSA 28 04, number 07835.

SRO-676-1/GA PC$3.00/MF$1.45
South Carolina Univ., Columbia. Dept. Of Chemistry.
CHEMISTRY OF RUTHENIUM COMPLEXES. FINAL REPORT.
E. E. Mercer. 1972, 12p
Contract AT(38-1)-676

Descriptors: (*Ruthenium complexes, *Chemistry), Chlorides, Infrared spectra, Nitrogen compounds, Raman effect.

For abstract, see NSA 28 05, number 12586.

UCLA-34-P-170-27/GA PC$4.00/MF$1.45
California Univ., Los Angeles. Dept. Of Chemistry.
COMPLEX ION CHEMISTRY. PROGRESS REPORT NO. 4 AND FINAL REPORT, JULY 1, 1971--DECEMBER 31, 1972.
C. S. Garner. 31 Dec 72, 39p
Contract AT(04-3)-34

Descriptors: (*Chromium complexes, *Chemical preparation), Absorption spectra, Research programs.

For abstract, see NSA 28 04, number 10621.

Y-1875/GA PC$4.00/MF$1.45
Oak Ridge Y-12 Plant, Tenn. (Usa).
PROPERTIES OF CARBON DERIVED FROM PETROLEUM PITCHES.
O. J. Horne, W. E. Smith, and B. Napier. 21 Jun 73, 33p
Contract W-7405-eng-26

Descriptors: (*Carbon, *Physical properties), (*Pitches, Physical properties), (*Petroleum products, Physical properties).

For abstract, see NSA 28 06, number 13366.

7C. Organic Chemistry

AD-767 674/5GA PC$5.25/MF$1.45
Naval Postgraduate School Monterey Calif
AN ELECTRON SPIN RESONANCE STUDY OF N-DOPED TCNQ AND 2:1 TCNQ COMPLEX SALTS.
Master's thesis,
Stefan Alan Nyarady. Jun 73, 61p

Descriptors: (*Nitriles, *Electron spin resonance), (*Quinolines, Electron spin resonance), (*Semiconductors, Quinolines), (*Cyclohexenes, Semiconductors), Pyrolysis, Magnetic properties, Doping, Theses, Resistance(Electrical), Salts, N-heterocyclic compounds.
Identifiers: *Cyclohexadiene diylidene dimalononitrile, Tetrazine/dihydro-dimethyl, Semiconductor doping, Charge transfer complexes.

Complex 2:1 7,7,8,8-tetracyanoquinodimethand (TCNQ) salts of quinoline, 2-methylquinoline, 4-methylquinoline, and 7-methylquinoline were made. Their ESR spectra were observed and their magnetic susceptibilities and resistivities were determined. A new donor, 1,4-dimethyl-1,4-dihydro-s-tetrazine(DMDHT), was tried with TCNQ as acceptor. Magnetic susceptibility, resistivity, and ESR g-value measurements were made on the resulting complex. A complex of DMDHT(+)/C104(-) was made and an intense ESR singlet was observed. The ESR absorption of doped TCNQ was relatively constant from 350K to 100K. A possible explanation for this observed behavior is an excited state triplet 0.02 eV above the valence band of TCNQ. The lack of an observed doublet is explained with the 'almost-localized' electron model. As ESR kinetic study of the high temperature decomposition of TCNQ indicated more than one species resulting from decomposition. (Modified author abstract)

AD-767 720/6GA PC$3.00/MF$1.45
Bishop Coll Dallas Tex
RADIATION-INDUCED GRAFTING ON POLYAMIDES.
Technical rept.,
Joseph E. Wilson. Sep 73, 32p Rept no. TR-3
Contract N00014-72-C-0052

Descriptors: (*Styrenes, Copolymerization), (*Nylon, Copolymerization), Reaction kinetics, Polyethylene plastics, Films, Polyamide plastics, Solubility.
Identifiers: *Graft polymerization, Plasticizing, *Radiation polymerization.

Earlier work indicated that in the radiation-induced grafting of vinyl monomers on polymeric films, the plasticity of the film being grafted is determined by the Hildebrand solubility parameter of the grafting solution. In the grafting of styrene on nylon film, a sequence of irradiation runs was made at selected volume ratios of styrene/benzene/methanol, all grafting solutions having a constant solubility parameter value of 7.8. A similar sequence of runs grafted pentafluorostyrene on nylon film at constant solubility parameter. Styrene was grafted on polyethylene film in a sequence of four runs using styrene dissolved in methanol, ethanol, 1-propanol, and 1-butanol, each solution having the same solubility parameter of 10.4. A straight-line plot of grafting rate versus volume percent styrene was obtained. (Modified author abstract)

AD-767 727/1GA PC$3.50/MF$1.45
Olin Corp New Haven Conn Chemicals Group
CARBORANE POLYMERS.
Final technical rept. 1 Aug 70-31 Jul 73,
Maurice A. Raymond, Robert N. Scott, Karl O. Knollmueller, Thomas A. Knowles, and Trescott B. Larchar. 28 Sep 73, 69p*
Contract N00014-71-C-0003

Descriptors: (*Organoboranes, Polymerization), (*Silicone plastics, Synthesis(Chemistry)), Elastomers, Thermal stability, Pyrolysis, Aging(Materials), Silanes, Vulcanization, Plastic coatings, Physical properties, Sulfides, Sulfoxides, Organic sulfur compounds.
Identifiers: *Polycarboranes, *Dexsil polymers.

Several new families of substituted DEXSIL polymers were prepared in the course of synthetic efforts directed toward three goals: (1) solvent resistant elastomers; (2) polymers for leaving group studies (RTV elastomers); and (3) high molecular weight DEXSIL 300 gumstock. In addition, a new synthetic pathway was developed and its great general utility was demonstrated by the synthesis of a wide variety of structurally modified polymers using only dianilido silanes and standard DEXSIL monomers. DEXSIL polymers showed outstanding performance as elastomeric coatings for metallic substrates. A practical, peroxide free, room temperature curing system based on the aromatic leaving group concept was developed. Comparative aging studies of DEXSIL and commercial high temperature silicone elastomers at temperatures up to 900F in air or high vacuum were conducted. Pyrolysis studies on a variety of sulfur

containing derivatives were performed. (Modified author abstract)

AD-767 768/5GA Reprint
Wisconsin Univ Madison Dept of Chemistry
POLYLITHIUM COMPOUNDS. VII. THE TETRALITHIUM COMPOUND FROM 1,3-PENTADIYNE AND SYNTHESIS OF ITS ORGANIC AND ORGANOMETALLIC DERIVATIVES,
T. Ling Chwang, and Robert West. 2 Nov 72, 9p AFOSR-TR-73-1729
Grant AF-AFOSR-1904-70
See also AD-724 954.
Availability: Pub. in Jnl. of the American Chemical Society, v95 n10 p3324-3330, 16 May 73.

Descriptors: (*Lithium compounds, Chemical reactions), Silanes, Metalorganic compounds, Spectra(Infrared), Germanium compounds, Alkynes, Alkenes, Heavy water, Synthesis(Chemistry), Nuclear magnetic resonance, Mass spectrum.
Identifiers: *Lithium/pentatetraenediylidenetetra, Lithium organic compounds.

1,3-Pentadiyne reacts with excess n-butyllithium complexed with TMEDA to form a perlithiated species, C5Li4. With water, C5Li4 forms three isomers, 1,3-pentadiyne, 1,4-pentadiyne, and 1,2-pentadien-4-yne; with deuterium oxide, the three corresponding perdeuterated isomers are obtained. C5Li4 reacts with dimethyl sulfate to give taree permethylated isomers, 6,6-dimethyl-2,4-heptadiyne, 4,4-dimethyl-2,5-heptadiyne, and 2,4-dimethyl-2,3-heptadien-5-yne. Quenching C5Li4 with either trimethylchlorosilane, ethyldimethylchlorosilane, or tert-butyldimethylchlorosilane yields only the sterically controlled products, tetrakis(organosilyl)-1,2-pentadien-4-ynes. Trimethylchlorogermane reacts with C5Li4 to give both 1,1,3,5-tetrakis(trimethylgermyl)-1,2-pentadien-4-yne and 1,5,5,5-tetrakis(trimethylgermyl)-1,3-pentadiyne. From infrared spectroscopy, C5Li4 is postulated to have mainly a pentatetraene structure, Li2C=C=C=C=CLi2. (Author)

AD-767 775/8GA Reprint
Massachusetts Inst of Tech Cambridge Dept of Chemistry
PHENYL (1-BROMO-1,2,2,2-TETRAFLUOROETHYL)MERCURY: A USEFUL TETRAFLUOROETHYLIDENE SOURCE,
Dietmar Seyferth, and Gerald J. Murphy. 28 Feb 73, 6p AFOSR-TR-73-1719
Grant AF-AFOSR-2204-72
Availability: Pub. in Jnl. of Organometallic Chemistry, v52 pC1-C4 1973.

Descriptors: (*Metalorganic compounds, Chemical reactions), (*Mercury compounds, Chemical reactions), Halogenated hydrocarbons, Fluorine compounds, Bromine compounds, Silanes.
Identifiers: Organic aliphatic compounds, Mercury/chloro-phenyl, Mercury/(bromotetrachloro)ethyl-phenyl, *Carbenes, Mercury organic compounds.

The reaction of phenylmercuric chloride, 1-bromo-1,2,2,2-tetrafluoroethane and methanolic sodium methoxide in tetrahyrofuran at -35C gave PhHgCFBrCF3 in good yield. Thermolysis of this mercurial at 155C for 24 h in the presence of olefins gave gem-fluoro(trifluoromethyl)cyclopropanes, while its reaction with triethylsilane produced Et3SiCHFCF3. (Author)

AD-767 781/8GA Reprint
University of Southern California Los Angeles Dept of Chemistry
SYNTHESIS AND MASS SPECTRAL BEHAVIOR OF REPRESENTATIVE 1,1-DICHLORO-2-FERROCENYLCYCLOPROPANES,
George W. Gokel, James Peter Shepherd, and William P. Weber. 20 Nov 72, 8p AFOSR-TR-73-1737
Grant AF-AFOSR-2424-73
Availability: Pub. in Jnl. of Organic Chemistry, v38 n10 p1913-1918 1973.

Descriptors: (*Ferrocenes, *Mass spectrum), (*Cyclopropanes, Mass spectrum), Synthesis(Chemistry), Nuclear magnetic resonance, Halogenated hydrocarbons, Metalorganic compounds, Chlorine compounds.
Identifiers: Carbenes, *Ferrocene/dichlorocyclopropyl.

1,1-Dichloro-2-ferrocenylcyclopropanes have been prepared in good yield by the addition of dichlorocarbene to vinylferrocenes under phase transfer catalysis conditions. The mass spectral fragmentation pattern of 1,1-dichloro-2-phenylcyclopropanes and of 1,1-dichloro-2-ferrocenylcyclopropanes are reported here and are found to be similar and quite simple. (Author)

AD-767 804/8GA Reprint
California Univ Berkeley Coll of Engineering
FORMATION MECHANISMS IN AN EXCITED-STATE-REACTION DYE LASER,
A. Dienes, R. K. Jain, and C. Lin. 1 Mar 73, 4p AFOSR-TR-73-1891
Contract F44620-71-C-0087
Availability: Pub. in Applied Physics Letter, v22 n12 p632-634, 15 Jun 73.

Descriptors: (*Lasers, Dyes), (*Dyes, Molecular energy levels), Excitation, Ground state, Chemical reactions, Fluorescence, Hydrogenation.
Identifiers: Chemical reaction mechanisms, Organic dye lasers.

The formation mechanisms in an excited-state-reaction coumarin laser dye are investigated by measurements of the saturation characteristics of the laser. By recording the influence of intense cavity oscillation on the single- and double-pass amplified spontaneous emissions of the two different 'exciplex' species, it is found that a 'serial' model applies, the green-emitting species being formed from the blue-emitting one. (Author)

AD-767 831/1GA Reprint
Hull Univ (England) Dept of Chemistry
REACTION OF N-PROPYL RADICALS WITH OXYGEN, HYDROGEN AND DEUTERIUM,
Roy R. Baldwin, Raymond W. Walker, and David A. Yorke. 29 Nov 72, 10p AFOSR-TR-73-1544
Grant AF-EOAR-0013-68
Availability: Pub. in Jnl. of the Chemical Society Faraday Transactions, v69 p826-832 1973.

Descriptors: (*Propanes, Heat of activation), Entropy, Free radicals, Oxygen, Hydrogen, Deuterium, Aldehydes, Reaction kinetics, Chemical reactions, Oxidation, Reduction(Chemistry).

N-C3H7 radicals have been produced by the oxidation of n-C3H7CHO at 450C. The following reactions are considered. (1) n-C3H7 + O2 = C3H6 + HO2; (2) n-C3H7 + H2 = C3H8 + H; (3) n-C3H7 + D2 = C3H7D + D; (4) n-C3H7 + C3H7CHO = C3H8 + C3H7CO. Reaction rates and activation energies are calculated.

AD-767 858/4GA Not available NTIS
Royal Military Coll of Canada Kingston (Ontario)
FORMATION AND DECOMPOSITION OF OZONIZATION PRODUCTS FROM ALKENES,
Dennis G. M. Diaper. 1973, 23p
Availability: Pub. in Oxidation and Combustion Reviews, v6 p145-167 1973.

Descriptors: (*Alkenes, Chemical reactions), (*Ozone, Chemical reactions), (*Ozonides, Chemical reactions), Stereochemistry, Photolysis, Pyrolysis, Reduction(Chemistry), Oxidation, Decomposition, Alcohols, Organic nitrogen compounds, Canada.
Identifiers: Chemical reaction mechanisms, *Ozonelysis, Zwitterions.

The report concerns mechanistic studies of the formation of ozonization products from alkenes and use of decomposition products from alkene ozonization in synthesis as well as in analytical procedures.

AD-767 861/8GA Not available NTIS
Royal Military Coll of Canada Kingston (Ontario) Dept of Chemistry and Chemical Engineering
REACTIONS OF OZONIDES. IX. A RADIOISOTOPIC DILUTION STUDY OF OZONIDE METHANOLYSIS,
Dundappa R. Kerur, and Dennis G. M. Diaper. 25 Jul 72, 6p
See also Paper 8, AD-698 434. Revision of report dated 5 Oct 71.
Availability: Pub. in Canadian Jnl. of Chemistry, v50 n24 p4029-4033 1972.

Descriptors: (*Ozonides, Chemical reactions), Methanols, Labeled substances, Radioactive isotopes, O-heterocyclic compounds, Canada.
Identifiers: Alcoholysis.

A radioisotopic dilution study indicates that no significant amounts of HOOCH(OCH3)((CH2)9)(14C)O2CH3 are produced by reacting (C2H3O3)((CH2)9)(14C)O2CH3 (an ozonide) with methanol. (Modified author abstract)

AD-767 936/8GA PC$2.75/MF$1.45
Naval Ordnance Lab White Oak Md
THE EFFECT OF STRUCTURE ON CARBON FORMATION IN POLYQUINOXALINES,
James V. Duffy, and Joseph M. Augl. 17 Aug 73, 18p Rept no. NOLTR-73-161

Descriptors: (*N-heterocyclic compounds, Pyrolysis), (*Polymers, Thermal stability), Polymers, Thermogravimetric analysis, Molecular structure, Sterochemistry, Ethers, Crosslinking(Chemistry), Imides, Amides.
Identifiers: *Polyquinoxalines, Quinoxalines, Carbonization.

Thermogravimetric analysis of polyquinoxaline polymers has provided a great deal of information regarding the relationship between polymer structure and thermal stability. This data has been used to show how bridging groups, pendant phenyl groups, cross-linking, steric factors, and backbone modifications affect carbon retention following pyrolysis. (Modified author abstract)

AD-767 961/6GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
THE DERIVATION AND PROPERTIES OF POLYMERS CONTAINING QUINOLINE RINGS IN A CHAIN,
I. Shopov, and N. Kasabova. 26 Sep 73, 17p Rept no. FTD-HC-23-525-73
Edited trans. of Bulgarska Akademiya na Naukite, Sofia. Otdelenie za Khimicheski Nauki. Izvestiya, v4 n4 p619-627 1971.

Descriptors: (*Quinolines, Polymers), N-heterocyclic compounds, Solubility, Physical properties, Polymerization, Bulgaria, Synthesis(Chemistry), Thermal stability, Molecular structure, Polycyclic compounds, Carboxylic acids.
Identifiers: Translations.

Through polycyclization of diisatinic acids with aromatic dike-tones, three polymers are obtained which contain 2-phenylcinchoninic acid as a repeating ring. In these polymers the repeating rings are connected by a simple bond, an oxygen atom or a methylene group. The structure of the

polymers is determined by comparing their infrared and electronic spectra with the spectra of six model compounds synthesized for this purpose. The electronic spectra and the spectra of electronic paramagnetic resonance show the presence of conjugations in the length of the chain of all three polymers. The polymers are soluble in a water solution of alkali or triethylamine. From these solutions one can extract transparent, yellow-colored films. Upon being heated, the polymers are decarboxylized (above 320C) and return to polyphenylenequinolines.

AD-768 157/0GA PC$2.75/MF$1.45
Coating and Chemical Lab Aberdeen Proving Ground Md
FLASH DISTILLATION METHOD AND ITS APPLICATION FOR ANALYSIS OF PETROLEUM FUELS.
Final rept.,
Marjan Kolobielski. Aug 73, 24p* Rept no. CCL-3005

Descriptors: (*Distillation, Fuels), (*Fuels, Chemical analysis), (*Fuel additives, Chemical analysis), Vacuum, Gasoline, Fuel oil, Laboratory equipment, Spectra(Visible + ultraviolet).
Identifiers: *Vacuum distillation, Distillation equipment, Concentrating, Residues, Spectrochemical analysis, *Flash distillation.

There exists a need in the petroleum area for a method to determine the nonvolatile components of petroleum fuels, gasoline, distillates, and fuel oil, without alteration of these components. In the present study this objective was accomplished by developing a new laboratory method. In this method the fuel is evaporated under high vacuum at moderate temperatures by using a short-path laboratory rotating evaporator. The method was applied to the analysis of gasoline, detergent additive in gasoline, and heavy petroleum bottoms contaminants in diesel fuel. In the latter example the method demonstrated a significant correlation between the amount of the heavy nonvolatile component and the absorption of diesel fuel in the visible region of spectrum. (Author)

AD-768 255/2GA PC$3.00/MF$1.45
Royal Aircraft Establishment Farnborough (England)
TWO-DIMENSIONAL CHROMATOGRAPHY OF A CORTICOSTEROID MIXTURE IN A THIN LAYER OF KSK SILICA GEL,
V. I. Volkova, G. A. Gazlev, and L. A. Popova. Jul 73, 8p Rept no. RAE-Library Trans-1705 DRIC-BR-36946
Trans. of Voprosy Meditsinskoi Khimii (USSR) v16 p101-103 Jan/Feb 70, by D. B. Toms.

Descriptors: (*Thin layer chromatography, *Corticosteroid agents), Silica gel, USSR.
Identifiers: Translations.

A method of two-dimensional chromatography in a thin layer of KSK silica gel was used to effect the separation of a mixture of corticosteroids consisting of cortisone, cortisol and their tetrahydro-derivatives, corticosterone, aldosterone, 11-dehydrocorticosterone, desoxycorticosterone, substance S and its tetrahydro-derivative. (Author)

AD-768 272/7GA Not available NTIS
Defence Research Establishment Ottawa (Ontario)
A RAPID, SENSITIVE, GAS-LIQUID CHROMATOGRAPHIC METHOD FOR THE ANALYSIS OF BIS(2-CHLOROETHYL)SULFIDE COLLECTED FROM AIR IN HYDROCARBON SOLVENTS,
A. A. Casselman, N. C. C. Gibson, and R. A. B. Bannard. 27 Nov 72, 6p Rept no. DREO-666A
Availability: Pub. in Jnl. of Chromatography, v78 p317-322 1973.

Descriptors: (*Mustard agents, *Gas chromatography), Chromatographic analysis, Naphthalenes, Sulfides, Canada.
Identifiers: Organic sulfides, Sulfide/bis(2-chloroethyl), Mustard gas.

A rapid, sensitive gas chromatographic procedure for the analysis of mustard gas collected from air in hydrocarbon solvents has been developed to replace the 4-(4'-nitrobenzyl)pyridine method. Decalin is used as the solvent for collection of the mustard. The method is capable of detecting as little as 0.2 ng of mustard in a 1-microliter injection. (Modified author abstract)

AD-768 273/5GA Not available NTIS
Defence Research Establishment Ottawa (Ontario)
A GAS CHROMATOGRAPHIC-MASS SPECTROMETRIC METHOD FOR ANALYSIS OF THE CONTENTS OF AEROSOL IRRITANT PROJECTORS,
A. A. Casselman, R. A. B. Bannard, and R. F. Pottie. 20 Feb 73, 6p Rept no. DREO-677
Prepared in cooperation with National Research Council of Canada, Ottawa (Ontario). Rept. no. NRC-13095.
Availability: Pub. in Jnl. of Chromatography, v80 p155-160 1973.

Descriptors: (*Irritating agents, *Gas chromatography), (*Non-lethal agents, Mass spectroscopy), Aerosols, Chemical analysis, Sampling, Acetones, Bromine compounds, Halogenated hydrocarbons, Fluorine compounds, Chlorine compounds, Canada.
Identifiers: Dichlorodifluoromethane, Lachrymators, Propanone/bromo, Methane/Fluorotrichloro, Riot control agents.

A convenient method for the sampling and total analysis of the propellents and active agents contained in aerosol irritant projectors has been developed. A gas chromatograph equipped with a column packed with 6% Carbowax 20M on Chromosorb G and coupled to a mass spectrometer provides both quantitative and qualitative analysis for the components of a typical irritant projector. The main lachrymator, bromoacetone, represented 1.5% and the propellents dichlorodifluoromethane and trichlorofluoromethane, comprised 97.7% of the aerosol mixture. (Author)

COM-73-11574/3GA Reprint
National Marine Fisheries Service, Seattle, Wash. Pacific Fishery Products Technology Center.
THE USE AND EFFECT OF MIXED STANDARDS ON THE QUANTITATION OF POLYCHLORINATED BIPHENYLS,
F. Lee Beezhold, and Virginia F. Stout. 1973, 7p NOAA-73080101
Pub. in Bull. of Environmental Contamination and Toxicology, v10 n1 p10-15 1973.

Descriptors: (*Chlorine aromatic compounds, *Gas chromatography), Quantitative analysis, Chromatographic analysis, Standardization.
Identifiers: *Biphenyl/chloro.

A study was made of the problems encountered when the chromatogram of a sample being analyzed for polychlorinated biphenyls via GLC cannot readily be compared to a particular Aroclor standard. The use of mixed Aroclor standards was proposed and a study made of the effect of mixed standards on the analytical results. It was found that the choice of a standard could alter the values by more than a factor of 2. In addition, the particular mixture used as a standard should be reported along with resulting values. (Author)

CONF-721144-1/GA PC$3.75/MF$1.45
Oak Ridge National Lab., Tenn.
SCISSION OF THE SULFUR--SULFUR BOND IN DIPURINYL AND DIPYRIMIDINYL DISULFIDES BY CYANIDE.
B. C. Pal, and D. G. Schmidt. 1972, 34p

Descriptors: (*Disulfides, *Chemical reactions), Cyanides, Purines, Pyrimidines.

For abstract, see NSA 28 05, number 12536.

COO-3105-5/GA PC$3.25/MF$1.45
Columbia Univ., New York.
PROGRESS REPORT, AUGUST 1972--MAY 1973.
1973, 22p
Contract AT(11-1)-3105

Descriptors: (*Tritium, *Distribution), Amino acids, Atoms, Chemical reactions, Impurities, Labelled compounds, Peptides, Research programs.

For abstract, see NSA 28 05, number 10742.

COO-3148-5/GA PC$3.50/MF$1.45
Cornell Univ., Ithaca, N. Y. Dept. Of Chemistry.
ACIDIC BEHAVIOR OF CHLOROFORM.
Z. Margolin, and F. A. Long. 1972, 27p

Descriptors: (*Tritium, *Isotopic exchange), (*Deuterium, *Isotope effects), Aqueous solutions, Chemical reaction kinetics, Chemical reactions, Chloroform, Deuterium compounds, Dmso, Eigenfunctions, Hydroxides, Protons, Tritium compounds.

For abstract, see NSA 28 06, number 12711.

LA-UR-73-690/GA PC$3.25/MF$1.45
Los Alamos Scientific Lab., N. Mex.
LARGE-SCALE PHOTOSYNTHETIC PRODUCTION OF CARBON-13 LABELED SUGARS.
V. H. Kollman, C. T. Gregg, J. L. Hanners, T. W. Whaley, and D. G. Ott. 1973, 25p CONF-730525-2
Contract W-7405-eng-36

Descriptors: (*Carbon 13, *Isotopic exchange), (*Saccharides, *Labelling), Chemical preparation, Labelled compounds, Photochemistry.

For abstract, see NSA 28 06, number 12712.

LA-UR-73-695/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ORGANIC SYNTHESIS WITH STABLE ISOTOPES.
T. W. Whaley, V. N. Kerr, and D. G. Ott. 1973, 16p CONF-730525-1
Contract W-7405-eng-36

Descriptors: (*Labelled compounds, *Chemical preparation), Stable isotopes.

For abstract, see NSA 28 05, number 12565.

N73-29554/5GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
ULTRAVIOLET AND THERMALLY STABLE POLYMER COMPOSITIONS.
Patent Application.
R. F. Reinisch, H. R. Gloria, R. E. Goldsberry, and M. J. Adamson. 5 Jan 73, 19p NASA-CASE-ARC-10592-1, US-PATENT-APPL-SN-321179
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Aromatic compounds, *Azines, *Polymers, *Thermal stability, *Ultraviolet radiation, Optical properties, Patent applications, Physical properties.

For abstract, see STAR 1120

PAT-APPL-313389/GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
WATER PURIFICATION MEMBRANES AND METHOD OF PREPARATION.
Patent Application.
J. R. Hollahan, and T. Wydeven. Filed 8 Dec 72, 14p NASA-CASE-ARC-10643-1,
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Allyl compounds, *Monomers, *Osmosis, *Polymerization, *Thin films, Membranes, Patent applications, Plasma jets, Water treatment.

Allylamine and chemically related compounds are polymerized as thin films in the presence of a plasma discharge. The monomer compound can be polymerized by itself or in the presence of an additive gas to promote polymerization and act as a carrier. The polymer- ized films thus produced show outstanding advantages when used as reverse osmosis membranes.

PATENT-3 706 772/GA Not available NTIS
Department of the Navy Washington D C
FLUORODIGLYCIDYL ETHERS.
Patent,
Scott A. Reines. Filed 23 Mar 71, patented 19 Dec 72, 3p Rept nos. PAT-APPL-127 379,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Halogenated hydrocarbons), (*Halocarbon plastics, *Ethers), Benzenes, Fluorine compounds, Epoxy plastics, Plastic coatings, Synthesis(Chemistry), Films.
Identifiers: PAT-CL-260-348-R, Fluorine aromatic compounds, *Benzene/(bis((epoxypropoxy-hexafluoro)isopropyl))-tetrafluoro, Polymeric films, Biphenyl/(bis((epoxypropoxy-hexafluoro)isopropy))-octafluoro, Epoxy compounds.

The patent relates to bis (2-hydroxyhexafluoro-2-propyl)-tetrafluorobenzene and -octafluorobiphenyl intermediates and their corresponding diglycidyl ethers, useful for producing polymers with film forming properties.

PATENT-3 707 483/GA Not available NTIS
Department of the Navy Washington D C
FLUORINATED MONOGLYCIDYL ETHERS.
Patent,
Scott A. Reines. Filed 4 Feb 71, patented 26 Dec 72, 3p Rept nos. PAT-APPL-112 826,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Halogenated hydrocarbons), (*Surface-active substances, *Halogenated hydrocarbons), Fluorine compounds, Ethers, Epoxy plastics, Synthesis(Chemistry), Spectra(Infrared), Nuclear magnetic resonance.
Identifiers: *Coupling agents, Fluorine organic compounds, PAT-CL-260-348-R.

Fluorine-substituted benzyl monoglycidyl ethers and their precursors have been prepared containing a hexafluoroisopropyl group. These compounds are useful as coupling agents for bonding fluorinated monomers to chemically active agents, or as viscosity reducers for fluorinated epoxy resins.

PATENT-3 711 514/GA Not available NTIS
Department of the Navy Washington D C
HIGHLY FLUORINATED ALKYL ESTERS OF TRIMELLITIC ACID ANHYDRIDE AND METHOD FOR THEIR PRODUCTION.
Patent,
James E. Quick. Filed 12 Feb 70, patented 16 Jan 73, 4p Rept nos. PAT-APPL-10 942,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, *Halocarbon plastics), (*Halogenated hydrocarbons, Synthesis(Chemistry)), (*Curing agents, Halogenated hydrocarbons), (*Epoxy plastics, *Moisturepreoofing), Fluorine compounds, Friction, Wetting, Epoxy plastics, Anhydrides, Esters, Carboxylic acids.
Identifiers: Fluorine organic compounds, PAT-CL-260-346-3.

The patent describes highly fluorinated ester-anhydrides and diacids which are formed by reacting an acid anhydride chloride or a diacid with a perfluorinated aliphatic alcohol. The fluorinated esters will cure epoxy resins and form plastics which exhibit a low degree of wettability, a low degree of surface friction, and a low degree of water absorption. The fluoroester-cured epoxy resin plastics are useful in sonar dome and hydrofoil coatings, molded plastic articles, fuel tank linings, and aircraft adhesives.

PATENT-3 714 189/GA Not available NTIS
Department of the Navy Washington D C
PHENYLATED PYROMELLITIMIDES.
Patent,
Joseph M. Augi. Filed 22 Jul 71, patented 30 Jan 73, 3p Rept nos. PAT-APPL-165 347,
Previously filed as PAT-APPL-75 248, 24 Sep 70.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Imides), (*Imides, *Copolymerization), (*Plastic coatings, Imides), Ketones, Thermal stability, Solubility, Synthesis(Chemistry).
Identifiers: PAT-CL-260-326-C, *Benzene tetracarboxylic acid diimide/1-2-4-5, Diketones, Polyquinoxalines.

The patent describes the synthesis of a phenylated pyromellitimide which can be used to form phenylated imide-quinoxaline copolymers which are useful as coatings for fibers, graphite precursors, films, and laminating materials.

PATENT-3 720 639/GA Not available NTIS
Department of the Navy Washington D C
FLUORINATED POLYOLS.
Patent,
James R. Griffith. Filed 24 Jun 71, patented 13 Mar 73, 4p Rept nos. PAT-APPL-156 492,
Previously filed as PAT-APPL-13 172, 20 Feb 70.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, *Halocarbon plastics), (*Epoxy plastics, Polymerization), (*Halogenated hydrocarbons, Polymerization), Fluorine compounds, Catalysts, Amines, Ethers, Alcohols.
Identifiers: Polyether resins, *Fluorinated polymers, Fluorine aliphatic compounds, PAT-CL-260-33-4-EP.

The patent describes the formation of a fluorinated polyol from the polymerization reaction of a diglycidyl ether with a fluorinated dihydroxy hydrocarbon. The polymerization may be carried out with a tertiary amine catalyst and with or without a polar solvent. The reaction may take place in-situ as a coating on a surface, or as an adhesive between laminates, or as a molding material within a mold. The product is useful in applications requiring the hydrophobic properties of fluorine in combination with the adhesive and molding properties of epoxy resins.

PATENT-3 720 736/GA Not available NTIS
Department of the Navy Washington D C
PROCESS FOR THE SYNTHESIS OF DIHYDRO CARBONPHOSPHINATES.
Patent,
James E. Quick, and David L. Venezky. Filed 17 Mar 70, patented 13 Mar 73, 3p Rept nos. PAT-APPL-20 391,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Phosphines), (*Phosphines, Chemical reactions), Organic phosphorus compounds, Oxidation, Sulfoxides, Esters.
Identifiers: PAT-CL-260-973, *Phosphinates.

The patent describes a process for the synthesis of a dihydrocarbonphosphinate wherein a dihydrocarbonhalophosphine is oxidized in the presence of a dihydrocarbon sulfoxide, such as dimethylsulfoxide, and the reaction mixture thereof is reacted with an appropriate alcohol to form the desired ester. Dihydrocarbonphosphinates are useful as intermediates for making polymeric metal phosphinates, which have a wide versatility of uses, such as pigments for paints, rust inhibitors, and fabricating material for various shaped plastic-like articles.

PB-224 088/5GA PC$3.00/MF$1.45
Naval Ordnance Lab., White Oak, Md.
EFFECT OF CONTAINER MATERIAL ON SEVERAL ORGANIC PEROXIDES AT 130F.
Final rept.,
Eleonore G. Kayser. Apr 73, 31p NOLTR-73-89
DOT-TES-20-73-9

Descriptors: (*Peroxy organic compounds, *Shipping containers), Polyethylene, Thermal stability, Pressure, Outgassing, Compatibility.
Identifiers: Hazardous materials transportation.

Experiments have been carried out to measure the gassing rates or pressure developed over (a) several commercially available organic peroxides and (b) the same peroxides with added container material to determine if peroxide-container interactions occurred which would require special shipping conditions. An isothermal (at temperature equal to maximum anticipated temperature during transport (130F) constant-volume system equipped for measurement of pressure increase as a function of time was used for this investigation. (Author)

UCID-16198/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
SIMULTANEOUS DETERMINATION OF CARBON, HYDROGEN, AND NITROGEN IN ORGANIC COMPOUNDS.
R. K. Stump, and J. W. Frazer. 18 Jan 73, 7p
Contract W-7405-eng-48

Descriptors: (*Carbon, *Chemical analysis), (*Hydrogen, Chemical analysis), (*Nitrogen, Chemical analysis), (*Organic compounds, Chemical analysis), Combustion, Computers, Errors, Quantitative chemical analysis.

For abstract, see NSA 28 04, number 07848.

Y-DA-5091/GA PC$3.00/MF$1.45
Oak Ridge Y-12 Plant, Tenn. (Usa).
COPOLYMERIZATION OF BENZOFULVENE COMPOUNDS.
O. J. Jr. Horne. 8p CONF-730507-4
Contract W-7405-eng-26

Descriptors: (*Cycloalkenes, *Copolymerization), Carbon, Polymers.

For abstract, see NSA 28 05, number 12605.

7D. Physical Chemistry

AD-767 666/1GA PC$2.75/MF$1.45
Arizona Univ Tucson Dept of Physics
ON THE POSSIBILITY OF HIGH PRECISION BEAM-FOIL SPECTROSCOPY USING A MODIFIED LAMB-DIP TECHNIQUE,
W. Chow, A. D. Maio, and M. O. Scully. 1972, 11p
AFOSR-TR-73-1670
Grant AF-AFOSR-1921-70
Pub. in Proceedings of International Conference on Beam-Foil Spectroscopy (3rd), Tucson, Arizona, 1972, 11p.

Descriptors: (*Atomic spectroscopy, *Lasers), (*Particle beams, Atomic spectroscopy), Resolution.
Identifiers: *Beam foil spectroscopy, Saturation.

The application of beam-foil techniques to high precision atomic physics is complicated by dispersion in the atomic velocities. This is analogous to the thermal Doppler broadening found in conventional laboratory sources. The advent of stable high-intensity laser sources has led to saturation (Lamb-dip) spectroscopy, which enables measurement eigenfrequencies and natural lifetimes independent of the Doppler width. The application of this idea to beam-foil experiments involves two (tunable) laser sources. A simple calculation suggests that the resolution might be improved by several orders of magnitude. (Modified author abstract)

AD-767 705/7GA PC$2.75/MF$1.45
Belfer Graduate School of Science New York
REARRANGEMENTS IN FIVE- AND SIX-COORDINATE SYSTEMS,
Jeremy I. Musher. 10 Sep 73, 18p
Contract N00014-68-A-0005

Descriptors: (*Complex compounds, *Stereochemistry), (*Molecular isomerism, Complex compounds).
Identifiers: *Rearrangement reactions.

The concept of modes of rearrangement has been outlined and several examples have been given both from five-and six-coordinate stereoisomers.

AD-767 709/9GA PC$3.00/MF$1.45
Avco Everett Research Lab Inc Everett Mass
NEGATIVE ION DETACHMENT.
Final technical rept.,
A. Mandl. Jun 73, 38p
Contract N00014-71-C-0386, ARPA Order-1479

Descriptors: (*Fluorides, Oxidation), (*Iodides, *Oxidation), Reaction kinetics, Shock waves, Ions.
Identifiers: Atom ion interactions, Ion molecule interactions, *Electron detachment.

A series of detachment rates of electrons from both F(-) and I(-) have been measured at high temperatures. The F(-) was produced by shock heating CsF and the I(-) was produced by shock heating CsI. (Modified author abstract)

AD-767 719/8GA PC$3.00/MF$1.45
Aerochem Research Labs Inc Princeton N J
MASS SPECTROMETRIC STUDY OF COMBUSTION PLASMA.
Final rept. 1 Aug 71-31 Jul 73,
William J. Miller. Sep 73, 47p Rept no. AeroChem-TP-300
Contract N00014-72-C-0053

Descriptors: (*Transition elements, *Thermochemistry), (*Hydrogen compounds, *Reduction(Chemistry)), (*Aluminates, *Combustion), Fuel additives, Molybdates, Vanadates, Chromates, Ions, Flames, Mass spectroscopy, Borates, Chlorides, Reaction kinetics, Solid rocket propellants.
Identifiers: Thermochemical properties.

Premixed laminar combustion flames have been used in this program as a medium in which to study the ion chemistry of a number of metals of potential importance as rocket propellant additives or fuel constituents. The study included examination of (i) the thermochemistry of molybdenum, vanadium and chromium-containing negative ions (ii) the kinetics of electron attachment to HBO2 and HCl and (iii) the charged species chemistry of aluminum compounds at high temperatures. (Modified author abstract)

AD-767 733/9GA Reprint
California Univ Santa Barbara Dept of Physics
PARA- TO ORTHO-HYDROGEN CONVERSION ON MAGNETIC SURFACES,
K. G. Petzinger, and D. J. Scalapino. 26 Jan 73, 15p AFOSR-TR-73-1682
Grant AF-AFOSR-2007-71
Availability: Pub. in Physical Review B, v8 n1 p266-279, 1 Jul 73.

Descriptors: (*Hydrogen, *Nuclear spins), Adsorption, Magnetic properties, Magnetic fields, Reaction kinetics.

The authors have calculated the rate of para- to ortho-hydrogen conversion when the transition occurs in a physically-absorbed-gas surface layer above a magnetic substrate. The conversion rates for surfaces with dilute, random, paramagnetic surface sites and for surfaces with a regular lattice of magnetic sites are considered separately. Absolute rates in terms of physical parameters are obtained for a variety of different physical situations. (Author)

AD-767 735/4GA Reprint
Utah Univ Salt Lake City Dept of Physics
SLATER ORBITAL MOLECULAR INTEGRALS WITH NUMERICAL FOURIER TRANSFORM METHODS. I. (COPLANAR) MULTICENTER EXCHANGE INTEGRALS OVER 1S ORBITALS,
Ante Graovac, Hendrik J. Monkhorst, and Tomislav Zivkovic. 27 Sep 72, 20p AFOSR-TR-73-1683
Grants AF-AFOSR-1992-71, NSF-GP-31373X
Revision of report dated 2 May 72.
Availability: Pub. in International Jnl. of Quantum Chemistry, v7 p233-251 1973.

Descriptors: (*Molecular orbitals, Integral transforms), Fourier analysis, Integration.
Identifiers: Slater orbitals, Slater integrals, Fourier transformation, Numerical integration.

Slater orbital integrals are calculated with a numerical Fourier-transform method based on a formulation first given by Bonham, Peacher and Cox. Spherical wave expansions are introduced that decouple the Feynman integrations for the charge distribution Fourier transforms. The Feynman integrals are evaluated semianalytically, and their properties are analyzed in detail. The final computational step involves a numerical integration over charge distribution quantities. Results for (coplanar) multicenter exchange integrals over 1s orbitals are given. As long as the charge distributions are overlapping considerably, the method gives good results, even when these distributions are highly asymmetric. The method as presently implemented fails when highly disconnected charge distributions are involved. (Author)

AD-767 745/3GA Reprint
Florida Univ Gainesville Quantum Theory Project
ELECTRONIC EXCITATIONS OF OPEN SHELL SYSTEMS IN THE GRAND CANONICAL AND CANONICAL TIME-DEPENDENT HARTREE-FOCK MODELS. APPLICATIONS ON HYDROCARBON RADICAL IONS,
P. Jergensen. 22 Jun 72, 10p Rept no. Florida-TR-294 AFOSR-TR-73-1883
Grant AF-AFOSR-1714-69
Availability: Pub. in the Jnl. of Chemical Physics, v57 n11 p4884-4892, 1 Dec 72.

Descriptors: (*Aromatic compounds, Electron transitions), (*Hartree-Fock approximation, Aromatic compounds), Excitation, Molecular energy levels, Ions, Molecular orbitals, Spectra(Visible + ultraviolet), Theory.
Identifiers: *Configuration interaction method, *Aromatic polycyclic hydrocarbons.

Open shell extensions of the conventional monoexcited configuration interaction method and the time-dependent Hartree-Fock model are developed by using the grand canonical and the canonical ensemble averaging procedures. The electronic excitations are considered to be from a ground state which has fractional occupational numbers. The models are applied to conjugated hydrocarbon radical ions within the Pariser-Parr Pople model. (Author)

AD-767 774/3GA Reprint
Stanford Univ Calif Dept of Chemistry
MOMENTS OF THE END-TO-END VECTOR OF A CHAIN MOLECULE, ITS PERSISTENCE AND DISTRIBUTION,
Paul J. Flory. 19 Mar 73, 6p AFOSR-TR-73-1733
Grant AF-AFOSR-2441-73
Availability: Pub. in Proceedings of the National Academy of Science, v70 n6 p1819-1823 Jun 73.

Descriptors: (*Nucleotides, *Molecular structure), Vector analysis, Stereochemistry.
Identifiers: *Molecular conformations, Cyclization.

The persistence vector a is defined as the configurational average of the chain vector r connecting the ends of the molecule and expressed in a reference frame fixed with respect to the first two skeletal bonds. Moments of second and higher orders in the components of r may readily be calculated for real chains in the rotational isomeric state approximation, and from them the corresponding moments of the vector rho = r - a measured from the terminus of a. Development of the density distribution of rho about a is proposed as an alternative to the customary treatment of the density distribution of r about r = 0 on the assumption that this latter distribution should be (approximately) symmetric. Past difficulties in the analysis of cyclization equilibria involving rings of moderate size, such as occur in single strands of polynucleotide chains, conceivably may be overcome by adoption of this alternative. (Author)

AD-767 777/6GA Reprint
Sussex Univ Brighton (England) Chemical Lab
BONDING STUDIES OF COMPOUNDS OF BORON AND THE GROUP 4 ELEMENTS. PART 9. PHOTOELECTRON SPECTRA AND BONDING STUDIES OF HALOGENO-, DIMETHYLAMINO-, AND METHYLBORANES, BORON TRIHALIDES AND AMINOBORANES,
G. H. King, S. S. Krishnamurthy, M. F. Lappert, and J. B. Pedley. 12 Jun 72, 17p AFOSR-TR-73-1718
Grant AF-AFOSR-2220-72
See also Part 11 dated 18 Aug 72, AD-766 192.
Availability: Pub. in Faraday Discussions of the Chemical Society, n54 p70-83 1972. Availability: Available in microfiche only.

Descriptors: (*Borines, *Ionization potentials), (*Boron compounds, Ionization potentials), Molecular orbitals, Halides, Photoelectrons, Molecular energy levels, Organoboranes, Chemical bonds, Great Britain.
Identifiers: *Photoelectron spectra, Spectrum analysis, Spin orbit interactions.

The photoelectron (PE) spectra, excited by helium 21.22 eV radiation, of the compounds BX3 and BX2Y (X and Y chosen from F, Cl, Br, I, NMe2, or Me) have been measured. From these and

published data, the spectra of the boron trihalides have been fully assigned; earlier proposals have been re-assessed on the basis of (1) line shapes, (2) calculations of spin-orbit coupling and of orbital energies as a function of distortion, and (3) comparisons with other BX'3 (e.g., X' = NMe2, NHMe) spectra. Assignments for the other BX3 and BX2Y molecules are based on (1) line shapes, and (2) a comprehensive analysis of trends within series. (Modified author abstract)

AD-767 778/4GA Reprint
Nevada Univ Reno Dept of Chemistry
VIBRATIONAL TRANSITIONS IN ATOM + DIATOMIC SYSTEMS. USE OF LENNARD-JONES POTENTIAL,
Hyung Kyu Shin. 11 Dec 72, 11p Rept no. Contrib-1043 AFOSR-TR-73-1720
Grant AF-AFOSR-2231-72
Availability: Pub. in Jnl. of Physical Chemistry, v77 n13 p1666-1673 1973.

Descriptors: (*Diatomic molecules, Molecular energy levels), Excitation, Molecular beams, Particle beams, Atoms, Numerical analysis, Potential scattering, Nitrogen, Argon.
Identifiers: Vibrational energy levels, Molecular vibration, Atom molecule interactions, *Transition probabilities, *Lennard-Jones potential, Interatomic potentials, Collisional energy transfer, Collision cross sections.

An analytic expression for the vibrational transition probability has been formulated by use of the perturbing force derived from the Lennard-Jones potential for which potential parameters are obtained from crossed-beam experiments. The dependences of the probabilities on collision velocity, orientation angle, attractive forces, impact parameter, and temperature are shown in detail. Numerical results of the transition probabilities for N2 + Ar show a complicated structured dependence on collisions velocity. The temperature dependence of the 1 to 0 de-excitation probability P(T) is also discussed. (Modified author abstract)

AD-767 782/6GA PC$3.00/MF$1.45
University of Southern California Los Angeles Dept of Physics
THE LOWERING OF THE IONIZATION POTENTIAL OF HYDROGEN AND CARBON IN A PLASMA.
Technical rept.,
Santosh K. Srivastava, and G. L. Weissler. 1 Oct 73, 20p Rept no. USC-VacUV-132
Contract N00014-67-A-0269-0014
Report on Vacuum UV Radiation Physics.

Descriptors: (*Ionization potentials, Plasma medium), (*Carbon, Ionization potentials), (*Hydrogen, Ionization potentials), Spectra(Visible + ultraviolet), Electron density, Atomic spectroscopy, Polarization.

The lowering of the ionization potentials of hydrogen and carbon atoms immersed in a high temperature and high density thermal plasma generated in a wall stabilized arc was estimated from the advance or shift of their respective series limits in the vacuum ultraviolet region of the spectrum for different electron densities and temperatures. Results show a close agreement with those theoretical calculations in which the effects of both microfield and polarization terms are added. However, electron densities are lower by about two orders of magnitude than the critical electron densities required by theory for the inclusion of the microfield term. The question of validity of a critical electron density is discussed. (Author)

AD-767 847/7GA Reprint
Cornell Univ Ithaca N Y Dept of Chemistry
THE HOMOGENEOUS GAS PHASE H2-D2 METATHESIS AT ROOM TEMPERATURE: REACTION INDUCED BY SPECIFIC VIBRATIONAL EXCITATION,
S. H. Bauer, D. M. Lederman, E. L. Resler, Jr., and E. R. Fisher. 1 May 72, 14p
Contracts AF-49(638)-1448, DAHC04-70-C-0022
Prepared in cooperation with Wayne State Univ., Detroit, Mich. College of Engineering.
Availability: Pub. in the International Jnl. of Chemical Kinetic, v5 p93-106 1973.

Descriptors: (*Hydrogen, Chemical reactions), (*Heat of activation, Molecular energy levels), Excitation, Deuterium, Molecular beams, Shock tubes.
Identifiers: Molecule molecule reactions, Raman lasers, *Vibrational energy levels, Molecular vibration.

Reactions for which substantial activation energies are needed can be induced to occur at room temperature via specific vibrational excitation. The authors report on the use of the stimulated Raman effect to generate substantial populations in the critical vibrational states required for the homogeneous atom exchange between H2 and D2. The experimental arrangement is then described and the analytical results tabulated; the observed dependence on relative concentrations is semi-quantitatively rationalized. Independent shock tube and molecular beam investigations were similarly accounted for. Attention is called to the discrepancy between the generally concordant experimental results and the ab initio quantum mechanical calculations of the potential energy surface for 4H atoms. (Modified author abstract)

AD-767 849/3GA Reprint
Massachusetts Inst of Tech Cambridge Research Lab of Electronics
SOME PROPERTIES OF SPECTRAL LINE PROFILES,
M. W. P. Strandberg. 1 Jun 72, 23p
Contract DAAB07-71-C-0300
Availability: Pub. in the Annals of Physics, v77 n1/2 p174-196, 1 May 73.

Descriptors: (*Line spectrum, Mathematical analysis), Bandwidth, Hyperfine structure.

The analyticity of the generalized complex susceptibility is used to discuss the frequency dependence of the susceptibility of passive systems and, in particular, to derive some properties of the Gaussian-broadened Lorentz line profile. It is demonstrated that a convergent part of the frequency moments of a Lorentz profile can be unambiguously defined. (Author)

AD-767 868/3GA Reprint
New York Univ N Y Dept of Physics
REARRANGEMENT COLLISIONS AT VERY HIGH ENERGIES,
Robin Shakeshaft, and Larry Spruch. 5 Feb 73, 10p
Contract N00014-67-A-0467-0007, Grant DA-ARO-D-31-124-72-G92
Sponsored in part by Grant NSF-GU-3186.
Availability: Pub. in Physical Review A, v8 n1 p206-215 Jul 73.

Descriptors: (*Hydrogen, Proton bombardment), (*Protons, Electron capture), Quantum mechanics, Ground state.
Identifiers: *Charge exchange reactions, *Born approximation, Cross sections, Hydrogen atoms, Atom ion interactions.

The authors attempt to determine the energy dependence of the forward-scattering cross section at very high energies in an arbitrary rearrangement collision involving two heavy particles and a light particle. A born-type expansion is developed in the impact-parameter treatment for the forward capture amplitude. It can be shown that for a certain class of nonsingular interactions the second Born term provides the dominant contribution to the cross section at high energies, whether or not the Born series converges. (This may be the first example for which it has been shown that the second Born term dominates.) This result makes plausible the dominance of the second Born term in p -H forward charge exchange. (Modified author abstract)

AD-767 869/1GA Reprint
New York Univ N Y Dept of Physics
STATIONARY AND QUASISTATIONARY BOUNDS ON ARBITRARY BOUND-STATE MATRIX ELEMENTS,
Robert Blau, A. R. P. Rau, and Larry Spruch. 7 Dec 72, 7p
Contract N00014-67-A-0467-0007, Grant DA-ARO-D-31-124-72-G92
Availability: Pub. in Physical Review A, v8 n1 p131-137 Jul 73.

Descriptors: (*Helium, Ground state), (*Matrix algebra, Inequalities), Wave functions, Operators(Mathematics).

Rigorous upper and lower bounds on the diagonal and off-diagonal bound-state matrix elements of an arbitrary Hermitian operator W are derived while represent a significant improvement over previous results in that all first-order error terms are eliminated. These bounds to, however, contain error terms of the three-halves power of the errors in the trial functions used; they are therefore termed quasistationary bounds. In the particular but important case of the diagonal bound-state matrix obtained; the errors are of second order in the errors of the trial functions used. All trial functions can contain variational parameters. The results obtained are tested by computing upper and lower bounds on the expectation value of r1 + r2 for the ground state of helium, and a substantial improvement over previous bounds is obtained. (Author)

AD-767 910/3GA Reprint
National Bureau of Standards Washington D C Inst for Materials Research
RADIANCE TEMPERATURE OF NIOBIUM AT ITS MELTING POINT,
A. Cezairliyan. 29 Jan 73, 9p AFOSR-TR-73-1712
Availability: Pub. in the Jnl. of Research National Bureau of Standards A, v77A n3 p333-339, May/Jun 73.

Descriptors: (*Niobium, Thermal properties), Melting point, Temperature, High-temperature research, Surface properties, Surface roughness.
Identifiers: Radiance, Thermophysical properties, Pulse heating.

A subsecond duration pulse heating method is used to investigate variations in the radiance temperature (at 650 nm) of niobium near and at its melting point. Measurements were made on several specimens with different surface conditions. The results do not indicate any dependence of radiance temperature (at the melting point) on initial surface conditions. (Modified author abstract)

AD-768 043/2GA PC$2.75/MF$1.45
Systems Science and Software La Jolla Calif
CAPO: A COMPUTER CODE FOR CALCULATING EQUATION OF STATE/OPACITY INFORMATION.
Topical rept.,
Ira Katz, Robert Vik, and James Harvey. Oct 73, 16p Rept no. SSS-R-73-1825 DNA-3191T
Contract DNA0001-73-C-0061

Descriptors: (*Equations of state, Programming(Computers)), (*Absorption spectrum, Thermodynamics), (*Plasma medium, Equations of state), (*Iron, Absorption spectrum), Atomic energy levels, Gas ionization, Light transmission.
Identifiers: *Opacity, Thermodynamic properties, CAPO computer program, Transition probabilities.

The availability and applicability of CAPO, a computer code to calculate plasma equation of state and opacity information, is described. A calculation of a 50 eV iron spectrum is included as an example of CAPO's capabilities. (Author)

AD-768 051/5GA PC$4.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
MOLECULAR OXYGEN IN THE A SINGLET DELTA(G) STATE IN THE UPPER ATMOSPHERE,
M. N. Vlasov. 17 Sep 73, 36p Rept no. FTD-HT-23-799-73
Edited trans. of Institut Prikladnoi Geofiziki, Leningrad. Trudy (USSR) n16 p21-42 1971, by Louise E. Heenan.

Descriptors: (*Oxygen, *Upper atmosphere), Molecular energy levels, Electron transitions, Excitation, Luminescence, USSR, Photochemistry, Reaction kinetics, Ozone, Ionosphere.
Identifiers: Translations.

The translation discusses molecular oxygen in the upper atmosphere, especially the a singlet Delta(g) excited electronic state. The report includes a review of some experimental observations, theories of formation, and relevant kinetics and photochemistry.

AD-768 267/7GA Reprint
New York Univ N Y Dept of Physics
SIMPLE ATOMIC MODEL AND ITS ASSOCIATED WAVE FUNCTION,
R. O. Mueller, A. R. P. Rau, and Larry Spruch. 27 Dec 72, 9p
Contract N00014-67-A-0467-0007, Grant DA-ARO-D-31-124-72-G92
Revision of manuscript dated 28 Feb 72.
Availability: Pub. in Physical Review A, v8 n3 p1186-1194 Sep 73.

Descriptors: (*Atomic orbitals, *Wave functions), Quantum mechanics, Atomic energy levels, Ionization potentials.

A simple atomic model, with features characteristic of the screening-theory approach, is constructed and provides simple analytic trial wave functions which describe the motion of the inner electrons particularly well. The single-particle orbitals are taken to be orthogonal hydrogenlike functions with effective nuclear charges which depend on the quantum number 1. By a succession of reasonably good upper bounds the evaluation of the expectation value of the interelectronic terms is reduced to trivial algebraic expressions involving only the occupation number of electrons for each of the (n,l) subshells. With the resulting wave functions, a variety of atomic entities can be obtained directly in analytic form. These wave functions will be shown elsewhere to be very useful in exploratory analytic studies to judge the effectiveness of variational techniques in the evaluation of the expectation values of various atomic operators. Also, a straightforward adaptation of the present approach will be shown elsewhere to provide a much better understanding of atomic structure in the presence of the intense magnetic fields characteristic of pulsars. (Modified author abstract)

AD-768 269/3GA Reprint
General Electric Co Philadelphia Pa Re-Entry and Environmental Systems Div
CHEMI-IONIZATION IN THE OXIDATION OF THORIUM AND URANIUM VAPORS,
P. D. Zavitsanos. 30 Apr 73, 3p
Contract F30602-72-C-0412
Availability: Pub. in The Jnl. of Chemical Physics, v59 n4 p2162-2163, 15 Aug 73.

Descriptors: (*Uranium, Oxidation), (*Thorium, Oxidation), Reaction kinetics, Mass spectrum, Gas ionization.

Relative rate constants and mass spectral data are reported for chemi-ionization in the oxidation of thorium and uranium vapors.

AD-768 286/7GA PC$3.00/MF$1.45
Woods Hole Oceanographic Institution Mass
THE FINNIGAN 1015 GAS CHROMATOGRAPH-MASS SPECTROMETER SYSTEM: COMMENTS OF NINETEEN USERS.
Technical rept.,
Max Blumer. Oct 73, 45p Rept no. WHOI-73-67
Contract N00014-66-C-0241, Grant NSF-GA-35646

Descriptors: (*Gas chromatography, *Mass spectroscopy), Laboratory equipment, Spectrum analyzers.
Identifiers: Performance evaluation, *Mass spectrometers.

Nineteen users of the Finnigan 1015 Gas Chromatograph-Mass Spectrometer System were interviewed about their experience. The survey was directed principally at instrument performance (satisfaction, down time, major problems, stability, service problems), samples (type and size, inlets, data treatment), modifications and use (closed vs. open facility, background and duty of the operators, sensitivity and performance checks and special applications). The responses are discussed and tabulated and compared to the authors' experience with a CEC (now DuPont) 21-104 mass spectrometer. (Modified author abstract)

AD-768 332/9GA PC$3.75/MF$1.45
Air Force Materials Lab Wright-Patterson AFB Ohio
THE VAPOR PRESSURE AND HEATS OF VAPORIZATION OF NICKEL.
Technical rept. Sep 70-Sep 72,
Emile Rutner, and Gerard L. Haury. May 73, 85p* Rept no. AFML-TR-72-217

Descriptors: (*Nickel, *Vapor pressure), (*Heat of vaporization, Nickel), Nickel compounds, Dissociation, Thermodynamics, Silver, Oxygen, Ionization, Mass spectroscopy, Lead.
Identifiers: Heat of dissociation, Thermochemical properties, *Ionization cross sections, Nickel oxides.

The Langmuir technique for determining vapor pressure was used to determine the vapor pressure of nickel between 1233 and 1683K. The vapor pressure data thus obtained was combined with other available data in the literature to obtain a best value for the heat of vaporization of nickel solid and liquid. Equations for the vapor pressure of nickel in these temperature ranges were also determined. The data in the literature used to determine heats of dissociation of the Ni0 and Ni2 gaseous molecules was corrected, and revised heats of dissociation of Ni2 and Ni0 gaseous molecules were obtained, as well as estimates for heat of vaporization of Ni0 solid. The literature on ionization cross sections useful in mass spectrometry was examined, and best values of the ionization cross sections of silver, lead, and nickel were determined.

AD-768 352/7GA PC$7.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
ELEMENTAL ANALYSIS OF MATERIALS BY ENERGY-DISPERSIVE SPECTROMETRY OF X-RAYS PRODUCED BY A FOCUSING ELECTRON GUN.
Master's thesis,
William Charles Nielsen, Jr. Mar 73, 98p Rept no. GEP/PH/73-16

Descriptors: (*X-ray spectroscopy, *Microanalysis), (*Spectrum analyzers, X-ray spectroscopy), Electron bombardment, Laboratory equipment, Calibration, Fluorescence, Detectors, Germanium, Construction, Theses.
Identifiers: *X ray fluorescence spectroscopy, Trace elements, Performance evaluation.

The construction and operation of a system for elemental analysis of materials by energy-dispersive x-ray analysis are described. Fluorescent x rays from samples are excited either directly by electrons from the gun or by secondary x rays produced by using the electrons to excite interchangeable thin targets. With electron energies up to 40 keV and beam currents as high as 300 microamps elemental concentrations as low as 0.1 micrograms and less than 10 ppm have been detected with short exposures. The sensitivity of this system is compared to systems which use radionuclides and protons to excite x rays. (Modified author abstract)

BARC-647/GA PC$3.00/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
DETERMINATION OF PROTEIN CONTENT IN FOOD SAMPLES BY FAST NEUTRON ACTIVATION.
S. C. Misra, U. C. Gupta, U. S. Rao, and C. R. Bhatia. 1972, 11p
U.S. Sales Only.

Descriptors: (*Proteins, *Activation analysis), (*Food, Activation analysis), (*Nitrogen, Activation analysis), Neutron reactions, Quantitative chemical analysis.

For abstract, see NSA 28 05, number 10634.

BARC-648/GA PC$4.00/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
SPECTROGRAPHIC ANALYSIS OF TANTALUM OXIDE: (A) AN INTERMITTENT A. C. ARC METHOD; (B) A D. C. ARC METHOD.
L. C. Chandola, R. Venkatasubramanian, and V. S. Dixit. 1972, 38p
U.S. Sales Only.

Descriptors: (*Niobium, *Spectroscopy), (*Aluminium, Spectroscopy), (*Iron, Spectroscopy), (*Lead, Spectroscopy), Chemical analysis, Manganese, Molybdenum, Nickel, Quantitative chemical analysis, Silicon, Tantalum oxides, Tin, Titanium, Vanadium, Zirconium.

For abstract, see NSA 28 05, number 10651.

COM-73-11660/0GA PC$3.50/MF$1.45
National Bureau of Standards, Boulder, Colo. Cryogenics Div.
CALCULATED LIQUID PHASE THERMODYNAMIC PROPERTIES AND LIQUID-VAPOR EQUILIBRIA FOR FLUORINE-OXYGEN (FLOX) MIXTURES.
Final rept. Nov 72-Sep 73,
W. R. Parrish, and M. J. Hiza. Sep 73, 29p NBSIR-73-338
Sponsored in part by National Aeronautics and Space Administration, Cleveland, Ohio. Lewis Research Center.

Descriptors: (*Liquid oxygen, Thermophysical properties), (*Liquid fluorine, Thermophysical properties), Thermodynamic properties, Mixtures, Specific heat, Entropy, Enthalpy, Vapor pressure, Volume, Liquid phases, Vapor phases, Density(Number/volume), Cryogenics.

Liquid phase thermodynamic properties and liquid-vapor equilibria of fluorine-oxygen mixtures, for which no experimental data exist, have been calculated. The results are based on excess properties predicted from the Snider-Herrington equations, with an adjusted combining rule, and the corresponding data for the pure fluids. In the compressed liquid, molar volumes, enthalpy, entropy, and constant pressure specific heat were determined. Along the saturation boundary, coexistent vapor compositions and solution vapor pressures were determined as well. Corresponding properties of pure fluorine from experimental data

have also been included. (Modified author abstract)

COM-73-50821/0GA Not available NTIS
National Bureau of Standards, Washington, D.C.
GAS CHROMATOGRAPHIC DETERMINATION OF COMPOSITION PROFILES OF STABLE SPECIES AROUND A PROPANE DIFFUSION FLAME.
Final rept.,
E. C. Creitz. 1972, 6p
Pub. in Jnl. of Chromatographic Science, v10 p168-173 Mar 72.

Descriptors: (*Diffusion flames, Gas chromatography), (*Fluoroalkanes, Decomposition), (*Propane, Diffusion flames), Oxygen, Carbon, Hydrogen, Carbon monoxide, Pyrolysis, Decomposition, Gas analysis, Inhibition, Bromoalkanes, Fluorine organic compounds.
Identifiers: Methane/bromo-trifluoro.

An analytical method was developed for determining, quantitatively, with a GC, the gases present around a 2.4 cm high propane diffusion flame burning in air. The method gives quantitative results on samples having some constituents which may not be eluted from the column. Outside the yellow mantle the only fuel species found were carbon, hydrogen and carbon monoxide. The oxygen concentration dropped to zero at a distance of 0.57 mm from the yellow mantle indicating that pyrolysis of the fuel was essentially without 02. The absence of other fuel species implicates the hydrogen-oxygen chain reaction as having a part in the mechanism of inhibition. When CF3Br was added to the air, its decomposition was complete at a distance of 2.56 mm from the yellow mantle. The decomposition appeared to be chemical rather than thermal.

CONF-720994-1/GA PC$3.75/MF$1.45
Akademiya Nauk Sssr, Moscow. Fizicheskii Institut.
ATOM IN A POWERFUL LIGHT FIELD.
N. B. Delone. 1973, 32p
In Russian. U.S. Sales Only.

Descriptors: (*Photon collisions, *Ionization), (*Atoms, Photon collisions), Electromagnetic fields, Energy levels, Perturbation theory, Resonance, Tunnel effect, Visible radiation.

For abstract, see NSA 28 05, number 11617.

CONF-730613-2/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
DETERMINATION OF TRACE ORGANIC CONTAMINANTS BY HIGH-RESOLUTION LIQUID CHROMATOGRAPHY.
W. W. Jr. Pitt, C. D. Scott, and M. D. McBride. 1973, 15p

Descriptors: (*Organic compounds, *Chemical analysis), Chromatography, Environment, Pollution, Quantitative chemical analysis, Trace amounts.

For abstract, see NSA 28 05, number 12537.

CONF-730613-3/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn. Tennessee Univ., Knoxville.
APPLICABILITY OF THE RF-FURNACE TECHNIQUE FOR AA AND AE ANALYSES OF TRACE ELEMENTS IN ENVIRONMENTAL SAMPLES.
Y. Talmi, and R. Crosmun. 1972, 18p

Descriptors: (*Cadmium, *Spectrophotometry), (*Zinc, Spectrophotometry), (*Lead, Spectrophotometry), (*Copper, Spectrophotometry), Absorption spectroscopy, Chemical analysis, Emission spectroscopy, Fossil fuels, Furnaces, Microwave radiation, Soils, Tissues.

For abstract, see NSA 28 05, number 12538.

CONF-730613-4/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
SIMPLE, QUANTITATIVE X-RAY FLUORESCENT ANALYSIS FOR TRACE ELEMENTS.
C. J. Jr. Sparks, O. B. Cavin, L. A. Harris, and J. C. Ogle. 1973, 20p

Descriptors: (*X-ray fluorescence analysis, *Sensitivity), (*Strontium, X-ray fluorescence analysis), (*Coal, *Chemical analysis), (*Leaves, Chemical analysis), Environment, Impurities, Quantitative chemical analysis, Trace amounts.

For abstract, see NSA 28 05, number 10652.

COO-1182-36/GA PC$3.75/MF$1.45
Iowa Univ., Iowa City. Dept. Of Chemistry.
RESEARCH IN HIGH TEMPERATURE PHYSICAL CHEMISTRY. TECHNICAL PROGRESS REPORT, MAY 15, 1971--MAY 14, 1972 AND FINAL REPORT.
E. D. Cater. 11 Jun 73, 33p

Descriptors: (*Scandium sulfides, *Thermodynamic properties), (*Yttrium sulfides, Thermodynamic properties), (*Lanthanum sulfides, Thermodynamic properties), (*Praseodymium sulfides, Thermodynamic properties), Research programs, Enthalpy, Entropy, Gadolinium sulfides, Phase diagrams, Praseodymium oxides, Solid solutions, Solids, Sublimation heat, Uranium dioxide, Uranium sulfides, Very high temperature, X-ray diffraction, Zirconium sulfides, Barium oxides, Magnesium oxides, Molecular structure, Superlattices, Titanium oxides.

For abstract, see NSA 28 06, number 12749.

COO-2039-20/GA PC$3.00/MF$1.45
Michigan State Univ., East Lansing. Dept. Of Biophysics.
ELECTRONIC EXCITATION OF COMPOSITE SYSTEMS. TECHNICAL PROGRESS REPORT.
M. A. El-Bayoumt. 17 May 73, 5p
Contract AT(11-1)-2039

Descriptors: (*Indoles, *Absorption spectra), Luminescence.

For abstract, see NSA 28 05, number 12549.

COO-3148-7/GA PC$3.00/MF$1.45
Cornell Univ., Ithaca, N. Y.
MECHANISMS OF ACID-BASE CATALYSIS AND STUDIES IN DEUTERIUM OXIDE AS SOLVENT. FINAL REPORT.
F. A. Long. 10 May 73, 7p
Contract AT(11-1)-3148

Descriptors: (*Tracer techniques, *Heavy water), Bases, Catalysis, Chemical reaction kinetics, Deuterium, Inorganic acids, Isotope effects.

For abstract, see NSA 28 05, number 12544.

EUR-4963/GA PC$3.25/MF$1.45
European Atomic Energy Community, Ispra (Italy). Joint Nuclear Research Center.
MOLP: AN INTERACTIVE SYSTEM FOR MOLECULAR PROPERTIES CALCULATION.
L. Mongini, and A. Pollicini. May 73, 21p
U.S. Sales Only.

Descriptors: (*Molecular structure, *Computer calculations), Atoms, C codes, Electron spin resonance, Fortran, M codes, Molecules.

For abstract, see NSA 28 04, number 10565.

IEA-278/GA PC$3.00/MF$1.45
Instituto de Energia Atomica, Sao Paulo (Brazil).
REVERSE PRECIPITATION OF AMMONIUM DIURANATE FROM A SOLUTION OF URANYL SULFATE: DECONTAMINATION OF THE SULFATE ION.
A. Abrao, J. A. de Araujo, and J. M. Jr. Franca. Nov 72, 14p
In Portuguese. U.S. Sales Only.

Descriptors: (*Adu, *Chemical preparation), Coprecipitation, Ph value, Precipitation, Solutions, Sulfates, Temperature dependence, Time dependence, Uranyl compounds.

For abstract, see NSA 28 04, number 07990.

JINR-E12-6778/GA PC$4.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
CORRELATION BETWEEN THE OVERALL STABILITY CONSTANTS OF METAL COMPLEXES. VII. THE EFFECT OF TEMPERATURE.
M. H. Mihailov, V. Ts. Mihailova, and V. A. Khalkin. 1972, 17p
U.S. Sales Only.

Descriptors: (*Cadmium complexes, *Thermodynamics), (*Thallium complexes, Thermodynamics), Correlations, Medium temperature, Stability, Temperature dependence.

For abstract, see NSA 28 04, number 10573.

JUL-934-RW/GA PC$7.75/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Institut fuer Reaktorwerkstoffe.
EVAPORATION BEHAVIOUR AND SPECTROCHEMICAL EXCITATION PROCESSES UNDER THE APPLICATION OF DIFFERENT DISCHARGE GASES IN THE CARBON ARC.
M. Mazurkiewicz. Mar 73, 114p
In German. U.S. Sales Only.

Descriptors: (*Argon, *Emission spectroscopy), (*Helium, Emission spectroscopy), (*Oxygen, Emission spectroscopy), Carbon, Electric arcs, Excitation.

For abstract, see NSA 28 05, number 12560.

K-1843/GA PC$4.00/MF$1.45
Oak Ridge Gaseous Diffusion Plant, Tenn.
MASS SPECTROMETRIC ANALYSIS OF KRYPTON AND XENON IN LOW CONCENTRATIONS.
J. C. Horton. 7 Jun 73, 8p
Contract W-7405-eng-26

Descriptors: (*Xenon, *Mass spectroscopy), (*Krypton, Mass spectroscopy), Air, Nitrogen, Organic halogen compounds, Oxygen, Quantitative chemical analysis, Separation processes, Titanium, Trace amounts.

For abstract, see NSA 28 04, number 07846.

KFKI-72-72/GA PC$3.00/MF$1.45
Magyar Tudomanyos Akademia Kozponti Fizikai Kutato Intezete, Budapest.
PI -ELECTRON SCF-MO CALCULATIONS FOR DISUBSTITUTED BENZENE DERIVATIVES CONTAINING TWO ACCEPTOR GROUPS. PART II. NUMERICAL RESULTS OF CALCULATIONS.
A. I. Kiss, and J. Szoke. Jan 73, 17p
U.S. Sales Only.

Descriptors: (*Aldehydes, *Electronic structure), (*Carboxylic acids, Electronic structure), (*Nitro compounds, Electronic structure), Benzaldehyde, Benzoic acid, Nitrobenzene, Spectra.

For abstract, see NSA 28 04, number 10581.

KFKI-72-73/GA PC$3.00/MF$1.45
Magyar Tudomanyos Akademia Kozponti Fizikai Kutato Intezete, Budapest.
SINGLET TRANSITION ENERGIES, MIM WAVE FUNCTIONS, PPP CHARGE DENSITIES AND BOND ORDERS OF THE MONO- AND DISUBSTITUTED HALOGENBENZENES.
A. I. Kiss, A. Martin, and J. Szoke. Feb 73, 16p
U.S. Sales Only.

Descriptors: (*Halogenated aromatic hydrocarbons, *Spectroscopy), Bond angle, Electric charges, Energy-level transitions, Molecules, Wave functions.

For abstract, see NSA 28 05, number 12561.

LA-UR-73-694/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ENTHALPIES OF FORMATION OF SOME GADOLINIUM CARBIDES.
E. J. Jr. Huber, C. E. Jr. Holley, and N. H. Krikorian. 1973, 7p CONF-730901-1
Contract W-7405-eng-36

Descriptors: (*Gadolinium carbides, *Formation heat), Calorimetry, Chemical reactions, Combustion, Oxygen.

For abstract, see NSA 28 06, number 13120.

LA-5228/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
D + CLF SUB 3 : MOLECULAR-BEAM KINETICS.
J. B. Cross. May 73, 4p
Contract W-7405-eng-36

Descriptors: (*Deuterium, *Chemical reaction kinetics), (*Chlorine fluorides, Chemical reaction kinetics), Backscattering, Colliding beams, Deuterium compounds, Molecular beams.

For abstract, see NSA 28 04, number 10584.

LA-tr-73-4/GA PC$4.75/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
INVESTIGATIONS OF THE SPECTRUM OF A HYDROGEN FLUORIDE LASER.
H. Pummer. 31 Jan 72, 51p
Translation of IPP--4/31.

Descriptors: (*Lasers, *Hydrofluoric acid), Emission spectra, Low pressure, Mixing ratio.

For abstract, see NSA 28 04, number 10585.

LBL-1159/GA PC$11.25/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
MOLECULAR BEAM CHEMISTRY OF ALKALINE EARTH ATOMS.
C. A. Mims. May 73, 188p
Contract W-7405-eng-48

Descriptors: (*Alkaline earth metals, *Chemical reactions), Angular distribution, Atoms, Colliding beams, Molecular beams.

For abstract, see NSA 28 04, number 10588.

LBL-1199/GA PC$8.50/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
KINETICS OF SULFUR DIOXIDE FLUORESCENCE.
D. R. Martin. Mar 73, 128p
Contract W-7405-eng-48

Descriptors: (*Sulfur oxides, *Fluorescence), Excited states, Lifetime, Phase shift.

For abstract, see NSA 28 04, number 10590.

LBL-1657/GA PC$8.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
EXCITATION ENERGIES IN AN ELECTRICALLY PULSED LIGHT-EMISSION SOURCE APPLIED TO THE SEPARATION OF HIGHER IONIZED ATOMIC STATES: SPECTRA AND ENERGY LEVELS OF SCANDIUM 2+ AND VANADIUM 4+.
C. H. H. Van Deurzen. May 73, 117p
Contract W-7405-eng-48

Descriptors: (*Scandium ions, *Emission spectra), (*Vanadium ions, Emission spectra), Energy, Energy levels, Excitation, Ionization.

For abstract, see NSA 28 06, number 13564.

LBL-1900/GA PC$6.75/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
CORE-LEVEL PHOTOELECTRON SPECTROSCOPY OF SMALL MOLECULES.
D. W. Davis. May 73, 94p
Contract W-7405-eng-48

Descriptors: (*Molecules, *Photoelectron spectroscopy), Auger effect, Binding energy, Chemical shift, Electrons, Emission spectra, Gases, Line widths, Multiplets, Photoionization, Photon beams, Photon collisions.

For abstract, see NSA 28 06, number 13576.

LBL-2011/GA PC$6.75/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
RADIATIVE CORRECTIONS IN HYDROGEN-LIKE SYSTEMS.
P. J. Mohr. 14 May 73, 92p
Contract W-7405-eng-48

Descriptors: (*Elements, *Energy levels), (*Nuclei, *Electronic structure), Bound state, Coordinates, Coulomb field, Green function, Hydrogen, Mass, Mathematical space, Numerical solution, Photons, Radiative corrections, Renormalization, Self-energy.

For abstract, see NSA 28 06, number 13565.

MLM-2006/GA PC$4.00/MF$1.45
Mound Lab., Miamisburg, Ohio.
X-RAY DIFFRACTION TIME-STUDIES OF PLUTONIA AND THORIA SOLID SOLUTIONS.
P. W. Seabaugh, R. R. Eckstein, and D. K. Warner. 5 Jun 73, 16p
Contract AT-33-1-GEN-53

Descriptors: (*Plutonium oxides, *Lattice parameters), (*Thorium oxides, Lattice parameters), Aging, Annealing, Chemical composition, Crystallization, Least square fit, Plutonium 238, Solid solutions, Swelling, Time dependence, X-ray diffraction.

For abstract, see NSA 28 05, number 11134.

N-73-10685/GA PC$4.00/MF$1.45
National Aeronautics and Space Administration, Cleveland, Ohio. Lewis Research Center.
RELATION BETWEEN MOMENTUM TRANSFER AND CAPTURE AND TOTAL SCATTERING CROSS SECTIONS FOR ION--DIPOLE COLLISIONS.
J. V. Jr. Dugan. 1972, 10p CONF-721093-1, NASA-TM-X-68151

Descriptors: (*Ion collisions, *Capture), Dipoles, Linear momentum transfer, Rotational states, Temperature dependence, Total cross sections, Velocity.

For abstract, see NSA 28 06, number 13577.

N-73-12763/GA PC$7.60/MF$1.45
Pittsburgh Univ., PA. Space Research Coordination Center.
FORMATION OF EXCITED ATOMS DURING CHARGE EXCHANGE BETWEEN HYDROGEN IONS AND ALKALI ATOMS.
R. A. Nieman. 1971, 205p NASA-CR-129262

Descriptors: (*Hydrogen ions 1 plus, *Collisions), (*Potassium, *Ion collisions), (*Sodium, Ion collisions), Atoms, Capture, Charge exchange, Cross sections, Electron loss, Excited states, Kev range 01-10, Kev range 10-100, Metastable states, Total cross sections.

For abstract, see NSA 28 04, number 09232.

N73-29075/1GA PC$3.25/MF$1.45
Alabama A & M Univ., Normal. Dept. of Physics.
AN ADHESION CRITERION IN THE GAS SOLID INTERFACE.
Summary Report.
M. C. George. Jun 73, 22p NASA-CR-133618
Contract NGR-01-001-017

Descriptors: *Adhesion, *Gas-solid interfaces, *Molecular interactions, Crystal lattices, Dipole moments, Intermolecular forces.

For abstract, see STAR 1120

N73-29460/5GA PC$3.50/MF$1.45
Scientific Translation Service, Santa Barbara, Calif.
SYSTEMS THEORY IN ANALYSIS. 2: SYSTEM OF ANALYTICAL QUANTITY RANGES.
R. Kaiser, G. Gottschalk, R. Kaiser, H. Malissa, and J. Rendl. Aug 73, 30p NASA-TT-F-15029
Contract NASW-2483
Tran-Transl. Into English from Z. Anal. Chem. (Berlin), V. 261, 1972 p 1-10.

Descriptors: *Chemistry, *Metrology, *Standardization, Quantitative analysis, Units of measurement.

For abstract, see STAR 1120

N73-29524/8GA PC$3.75/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
RATES AND MECHANISMS OF THE ATOMIC OXYGEN REACTION WITH NICKEL AT ELEVATED TEMPERATURES.
J. D. Christian, and W. P. Gilbreath. Aug 73, 35p NASA-TM-X-62295

Descriptors: *Enthalpy, *High temperature research, *Nickel, *Oxidation, Cations, Diffusion, Ionization, Reaction kinetics.

For abstract, see STAR 1120

N73-29527/1GA PC$4.25/MF$1.45
Polytechnic of North London (England). Dept. of Chemistry.
INTERNATIONAL SYMPOSIUM ON THE MASS SPECTROMETRY OF METAL-CONTAINING COMPOUNDS: ABSTRACTS.
Apr 73, 45p
Conf-Conf. Held at London, 25-27 Apr. 1973.

Descriptors: *Mass spectroscopy, *Organometallic compounds, *Spectroscopic analysis, Chemical analysis, Metallography, Physical properties.

For abstract, see STAR 1120

N73-29672/5GA PC$4.75/MF$1.45
Old Dominion Univ., Norfolk, Va. School of Engineering.

APPROPRIATE LINE PROFILES FOR RADIATION MODELING IN THE DETECTION OF ATMOSPHERIC POLLUTANTS.
S. N. Tiwari. Mar 73, 54p NASA-CR-132303, TR-73-T3
Contract NAS1-9434

Descriptors: *Air pollution, *Atmospheric attenuation, *Spectral bands, Frequencies, Radiation measurement, Temperature inversions.

For abstract, see STAR 1120

N73-29723/6GA PC$3.25/MF$1.45
Techtran Corp., Silver Spring, Md.
SPECTROCHEMICAL ANALYSIS WITH A GLOW DISCHARGE TUBE AS LIGHT SOURCE. 3: DEVELOPMENT AND DESCRIPTION OF A UNIVERSAL METHOD FOR DETERMINING THE MAIN COMPONENTS IN NONCONDUCTING POWDERY SUBSTANCES.
S. Elalfy, K. Laqua, and H. Massmann. Aug 73, 25p NASA-TT-F-15031
Contract NASW-2485
Tran-Transl. Into English from Z. Anal. Chem. (West Berlin), V. 263, No. 1, 1973 p 1-4.

Descriptors: *Cathodes, *Electrical insulation, *Gas discharge tubes, *Spectroscopic analysis, Chemical analysis, Decomposition, Excitation.

For abstract, see STAR 1120

N73-29733/5GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
CALCULATED DIPOLE MOMENT AND ENERGY IN COLLISION OF A HYDROGEN MOLECULE AND A HYDROGEN ATOM.
R. W. Patch. Jul 73, 38p NASA-TM-X-2839, E-7342

Descriptors: *Digital computers, *Electric moments, *Hydrogen, *Intermolecular forces, Bibliographies, Chemical bonds, Dipole moments, Integral equations.

For abstract, see STAR 1120

N73-29742/6GA PC$5.50/MF$1.45
Georgia Inst. of Tech., Atlanta. School of Chemical Engineering.
CHEMICAL REACTIVITY OF HYDROGEN, NITROGEN, AND OXYGEN ATOMS AT TEMPERATURES BELOW 100 K.
Final Report.
H. A. Mcgee, Jr.. Aug 73, 70p NASA-CR-133654
Contracts NGL-11-002-005, PROJ. B-509

Descriptors: *Hydrogen, *Low temperature, *Nitrogen, *Oxygen, *Reactivity, Chemical properties, Chemical reactions, Cryogenics, Electron impact.

For abstract, see STAR 1120

ORNL-TM-4220/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.
CORRELATION OF AVAILABLE LITHIUM CHLORIDE AND HYDROCHLORIC ACID ACTIVITY COEFFICIENT DATA.
W. J. McDowell. Jun 73, 21p
Contract W-7405-eng-26

Descriptors: (*Hydrochloric acid, *Reaction kinetics), (*Lithium chlorides, Reaction kinetics), Equations, Solutions.

For abstract, see NSA 28 05, number 12571.

ORNL-TM-4228/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
STATUS REPORT ON COLD-VAPOR STUDIES.
R. N. Lyon, S. L. Milora, L. C. Fuller, and D. M. Eissenberg. Jun 73, 17p
Contract W-7405-eng-26

Descriptors: (*Ammonia, *Thermodynamic properties), (*Power plants, Thermodynamic cycles), (*Nuclear power plants, Thermodynamic cycles), (*Thermodynamic cycles, *Medium temperature), Cost, Evaporation, Heating, Low temperature, Physical properties, Vaporization heat, Vapors.

For abstract, see NSA 28 05, number 12476.

ORNL-TM-4239/GA PC$7.50/MF$1.45
Oak Ridge National Lab., Tenn.
THEORY OF SINGLE ELECTRON EXCITATION AND TRANSFER IN NEUTRAL ATOM--ATOM COLLISIONS.
R. B. Vora, J. E. Turner, and R. N. Compton. May 73, 106p
Contract W-7405-eng-26

Descriptors: (*Alkali metals, *Collisions), (*Oxygen, *Atom collisions), (*Atomic beams, *Charge exchange), Cross sections, Differential equations, Electrons, Energy-level transitions, Ev range 10-100, Ev range 100-1000, Excitation, Excited states, Ground states, Kev range 01-10, Perturbation theory, Probability, Time dependence, Velocity, Wave functions.

For abstract, see NSA 28 04, number 09233.

ORNL-TM-4293/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
OZONE FORMED BY HIGH-VOLTAGE TRANSMISSION LINE CORONAS.
W. Jr. Davis. 2 Jul 73, 7p

Descriptors: (*Ozone, *Corona discharges), Electric potential.

For abstract, see NSA 28 06, number 15155.

ORNL-4854/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
SURFACE MIGRATION OF OXIDES ON SODIUM CHLORIDE SUBSTRATES.
B. K. Annis. Jun 73, 37p
Contract W-7405-eng-26

Descriptors: (*Sodium chlorides, *Substrates), (*Lanthanum oxides, *Diffusion), (*Strontium oxides, Diffusion), High temperature, Radioactive wastes, Salt vault project, Surfaces, Waste disposal, Waste storage.

For abstract, see NSA 28 05, number 11242.

ORO-4254-7/GA PC$5.75/MF$1.45
Oklahoma State Univ., Stillwater.
POTENTIOMETRIC DETERMINATION OF PHOSPHATE.
M. L. Madden. May 72, 74p

Descriptors: (*Phosphates, *Potentiometry), Bismuth, Electrodes.

For abstract, see NSA 28 05, number 12574.

PB-223 785/7GA PC$3.00/MF$1.45
Bureau of Mines, Washington, D.C.
THE SPECTRAL GROWTH OF EXPANDING FLAMES: THE INFRARED RADIANCE OF METHANE-AIR IGNITIONS AND COAL-DUST-AIR.
Rept. of investigations,
M. Hertzberg, C. D. Litton, W. F. Donaldson, J. M. Kuchta, and A. L. Furno. Aug 73, 43p
BuMines-RI-7779
Prepared in cooperation with the Bureau of Mines, Pittsburgh, Pa. Pittsburgh Mining and Safety Research Center.

Descriptors: (*Explosions, *Infrared spectra), (*Dust explosions, Infrared spectra), Methane, Air, Radiance, Coal dust, Flames, Flame propagation, Infrared radiation, Mine fires, Combustion.
Identifiers: Time resolved spectroscopy.

Results are reported of a comprehensive study of the absolute spectral radiance of the infrared emissions from methane-air explosions. The spectral growth of these expanding flames are recorded with a time resolution of one msec in the spectral range of 1.7 to 5.0 microns. Time-solved spectra were obtained for methane-air mixtures as a function of stoichiometry, nitrogen dilution and Halon dilution, in a 9-liter vessel under different venting conditions. Data are also presented for coal-dust-air explosions.

PB-223 879/8GA PC$2.75/MF$1.45
Bureau of Mines, Washington, D.C.
THERMODYNAMIC PROPERTIES OF THREE SODIUM TITANATES.
Rept. of Investigations, Nov 70-Sep 71,
K. O. Bennington, and R. R. Brown. Aug 73, 18p
BuMines-RI-7778
Prepared in cooperation with Albany Metallurgy Research Center, Oregon.

Descriptors: (*Titanates, Thermodynamic properties), Heat of formation, Heat of solution, Gibbs free energy, Enthalpy, Chemical reactions, Rutile, Ilmenite.
Identifiers: *Sodium titanates.

Enthalpies of formation of three sodium titanates were determined by hydrofluoric acid solution calorimetry. The values obtained for formation from the elements at 298.15 deg K are minus 370.9 plus or minus 0.5 kcal per mole, for Na2TiO3, minus 832.1 plus or minus 0.9 kcal per mole for Na2Ti3O7, and minus 1,510.9 plus or minus 1.7 kcal per mole for Na2Ti6O13. Tables of enthalpies of formation and Gibbs energies of formation are given as a function of temperature both from the elements and from the component oxides for Na2TiO3 and Na2Ti3O7. (Author)

PB-224 172/7GA PC$4.75/MF$1.45
Council for Scientific and Industrial Research, Pretoria (South Africa). Chemical Engineering Research Group.
PULSE TECHNIQUE FOR EVALUATING DEPOLARIZATION BY MANGANESE DIOXIDE IN LECLANCHE POROUS ELECTRODES.
Special rept.,
Indru Olivier. May 73, 53p CSIR-SR-CENG-012
International Standard Book no. 0-7988-0384-3.

Descriptors: (*Manganese oxides, *Electrochemistry), (*Depolarization, Manganese oxides), Electrodes, Primary batteries, Dry cells, Union of South Africa.
Identifiers: Leclanche cells, Porous electrodes, Chronopotentiometric analysis.

A galvanostatic interruption technique is described for obtaining current-free potentials from a scaled-down Leclanche test cell under constant current discharge, in which sampling of the instantaneous cell potential at the end of the interruption interval is effected by electronic means. The total time taken for the potential so obtained to drop to a predetermined end-point value is used as a measure of the depolarising activity of the MnO2 sample under investigation. To ascertain the significance of the sampled potentials, recovery upon interruption is examined for a wide range of experimental conditions and the implications on choice of interval are discussed. (Modified author abstract)

PB-224 208/9GA PC$3.25/MF$1.45
National Environmental Research Center, Research Triangle Park, N.C. Control Systems Lab.
INTERACTIONS OF STACK GAS SULFUR AND NITROGEN OXIDES ON DRY SORBENTS.
Final rept.,
J. W. Brown, D. W. Pershing, J. H. Wasser, and E. E. Berkau. Sep 73, 23p EPA-650/2-73-029

Descriptors: (*Nitrogen oxide(NO), *Sorption), (*Sulfur dioxide, Sorption), (*Dessicants, Sorption), (*Nitrogen oxides, *Gas analysis), Gas sampling, Flue gases, Absorbers(Materials), Air pollution.
Identifiers: Gas surface interactions, Air pollution control, Calcium hyposulfite.

The report describes a brief test series that demonstrates that both Drierite and molecular sieve sorbents can cause incorrect NO results if SO2 is present. It was noted that the standard analytical system used for measuring NO emissions gave incorrect NO emmissions in the presence of SO2. The problem was traced to the dry sorbents used to remove water vapor prior to the NO analysis. Further testing revealed that the materials can simultaneously remove both NO and SO2, even in low concentrations. Although more work is needed to define the actual fate of these species, it appears that this might offer a possible NOx/SOx control technique since the data indicate that the sorbent effect is thermally regenerable. (Author)

PB-224 305/3GA PC$3.00/MF$1.45
New York Univ., N.Y. School of Engineering and Science.
CATALYTIC OXIDATION OF SULFUR DIOXIDE USING ISOTOPIC TRACERS.
Final rept.,
John Happel, and Miguel A. Hnatow. Aug 73, 36p* EPA-650/2-73-020
Grant EPA-R-801312

Descriptors: (*Sulfur dioxide, *Oxidation), (*Catalysis, *Isotopic labeling), (*Air pollution, Sulfur dioxide), Sulfur trioxide, Vanadium oxides, Catalysts, Sulfur isotopes, Oxygen isotopes, Reaction kinetics, Chemisorption.
Identifiers: Chemical reaction mechanisms, Air pollution control, Sulfur 35, Oxygen 18.

The report gives results of a study of the oxidation of SO2 over a commercial vanadium pentoxide catalyst, using an all-glass, essentially gradientless reactor at 470-480C and at concentrations up to several percent of SO2. A theoretical development was derived for the use of isotopic tracers to study the kinetics and mechanism of complex catalytic reactions. Relationships developed on the basis of steady state conditions are combined with principles of thermodynamics and transition state theory. Data were obtained using radioactive sulfur 35 and the stable isotope oxygen 18 as tracers. The employment of two tracers simultaneously and the employment of more than one level of marking while still maintaining a fixed overall reaction velocity were often advantageous. Oxygen chemisorption was found to be the most important mechanistic step in SO2 oxidation. However, as equilibrium is approached, desorption of SO3 also assumes considerable importance. These findings led to the formulation of an improved rate equation, especially accurate near equilibrium for SO2 conversion. The use of sulfur 35 in developing improved catalysts is also suggested.

PB-224 317/8GA PC$8.25/MF$1.45
Edinger (Stanley Evan), Brooklyn, N.Y.
THE CHEMISTRY OF GYPSUM AND ITS DEHYDRATION PRODUCTS. VOLUME II. THE PHYSICOCHEMICAL AND MECHANICAL PROPERTIES AND ANALYSIS OF THE PHASES. PART V. THERMOMETRIC METHODS OF ANALYSIS,
Stanley Evan Edinger. Oct 73, 406p* STEED-73-2-3-5
See also Volume 2, Part 4, PB-221 958.

Descriptors: (*Gypsum, *Bibliographies), (*Calcium sulfates, Bibliographies), (*Gypsum cements, Bibliographies), Differential thermal analysis, Temperature measurement, Physicochemical properties, Thermochemical properties, Thermophysical properties, Thermogravimetry, Crystal structure, Thermal analysis, Dilatometry, Phase transformations, Dehydration, Hydration.

The literature on the thermometric methods of analysis of the phases in the calcium sulfate system was abstracted in the fifth part of the second volume of an annotated bibliography on gypsum and its dehydration products. The literature covers the period from antiquity to the present and is arranged in alphabetical order by the author's last name. (Author)

RD/B/N-2412/GA PC$3.25/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
COMBUSTION OF LIQUID SODIUM IN AIR.
R. N. Newman. Nov 72, 22p
U.S. Sales Only.

Descriptors: (*Sodium, *Combustion), Air, Fires, Liquid metals, Temperature dependence.

For abstract, see NSA 28 04, number 08625.

RLO-2221-T-6-15/GA PC$20.00/MF$1.45
Washington State Univ., Pullman.
SPECTROSCOPIC STUDIES OF ACTINIDE IONS IN CRYSTALLINE SOLIDS. PROGRESS REPORT, OCTOBER 1, 1972--SEPTEMBER 30, 1973.
J. B. Gruber. 1973, 359p
Contract AT(45-1)-2221

Descriptors: (*Uranium chlorides, *Spectra), (*Actinides, *Spectroscopy), (*Rare earths, Spectroscopy), Absorption spectra, Crystals, Electrical properties, Fluorescence, Ions, Magnetic resonance, Optical properties, Research programs, Solids, Vapors, Zeeman effect.

For abstract, see NSA 28 04, number 07991.

RLO-2227-T-7-22/GA PC$6.75/MF$1.45
Oregon State Univ., Corvallis.
NUCLEAR CHEMISTRY PROGRESS REPORT, MARCH 15, 1972 TO MARCH 15, 1973.
W. D. Loveland. Mar 73, 100p
Contract AT(45-1)-2227

Descriptors: (*Activation analysis, *Uses), (*Tracer techniques, Activation analysis), Neutron reactions, Pollution, Research programs, Trace amounts.

For abstract, see NSA 28 05, number 10637.

SLA-73-465/GA PC$4.75/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
CLASSICAL ATOMIC SCATTERING CROSS SECTIONS FOR THETA/SUB LAB/ = 90 EXP 0 BASED ON A SCREENED COULOMB POTENTIAL.
G. C. Nelson. May 73, 55p

Descriptors: (*Helium ions, *Collisions), (*Neon ions, Collisions), (*Atoms, *Ion collisions), Coulomb field, Differential cross sections, Ev range 100-1000, Helium 3, Helium 4, Kev range 01-10, Neon 20, Tables.

For abstract, see NSA 28 04, number 09234.

SLA-73-512/GA PC$3.50/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
TRITIUM CONTENT MEASUREMENTS OF LOADED THIN FILMS.
B. T. Kenna, and G. C. Nelson. May 73, 27p

Descriptors: (*Tritium, *X-ray spectroscopy), (*Erbium, *Chemical analysis), Beta decay, Bremsstrahlung, Films, Nondestructive analysis, Quantitative chemical analysis.

For abstract, see NSA 28 04, number 07873.

SLA-73-5282/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ELECTRONIC RECOMBINATION AND THE EFFECTS OF METASTABLES IN A HELIUM AFTERGLOW.
A. W. Johnson, and J. B. Gerardo. 4p CONF-730906-2

Descriptors: (*Helium, *Recombination), Afterglow, Metastable states.

For abstract, see NSA 28 05, number 12584.

SLA-73-5283/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
MECHANISMS CONTROLLING THE DECAY OF THE 1730 A CONTINUUM OF XENON RADIATION.
A. W. Johnson, and J. B. Gerardo. 1972, 4p CONF-730906-3

Descriptors: (*Xenon, *Emission spectra), Molecules.

For abstract, see NSA 28 06, number 15162.

SLA-73-5284/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
EFFECT OF METASTABLES ON THE TRANSITION FROM AMBIPOLAR TO FREE DIFFUSION: HE--AR MIXTURES.
R. A. Gerber, and J. B. Gerardo. 1973, 4p CONF-730906-1

Descriptors: (*Argon ions, *Diffusion), Argon, Electron density, Helium, Metastable states, Mobility.

For abstract, see NSA 28 06, number 15163.

SLA-73-550/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
SUPERELASTIC COLLISION OF ELECTRONS AND METASTABLE HELIUM ATOMS (2 EXP 3 S) IN A ROOM TEMPERATURE HELIUM AFTERGLOW.
A. W. Johnson, and J. B. Gerardo. May 73, 13p

Descriptors: (*Electron collisions, *Elastic scattering), (*Helium, Electron collisions), (*Electron beams, Elastic scattering), Atoms, Boundary conditions, Electron temperature, Metastable states.

For abstract, see NSA 28 06, number 15160.

UCID-15644-72-1/GA PC$5.75/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
ANALYTICAL CHEMISTRY QUARTERLY REPORT, JANUARY--MARCH 1972.
J. E. Harrar. 8 May 72, 72p
Contract W-7405-eng-48

Descriptors: (*Californium, *Emission spectra), (*Beryllium hydrides, *Electron spin resonance), (*Berkelium, *Stability), (*Helium, *Chromatography), Chemical analysis, Chemistry, Inorganic acids, Liquid scintillators, Neutron detectors, Research programs, X-ray fluorescence analysis.

For abstract, see NSA 28 05, number 10629.

UCID-15644-72-2/GA PC$5.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
ANALYTICAL CHEMISTRY QUARTERLY REPORT, APRIL--JUNE 1972.
J. E. Harrar. 21 Aug 72, 60p
Contract W-7405-eng-48

Descriptors: (*Chemistry, *Research programs), (*Actinides, *Spectroscopy), Zeeman effect.

For abstract, see NSA 28 05, number 10630.

UCID-15644-72-4/GA PC$4.25/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
ANALYTICAL CHEMISTRY QUARTERLY REPORT, OCTOBER--DECEMBER 1972.
J. E. Harrar. 28 Feb 73, 44p
Contract W-7405-eng-48

Descriptors: (*Chemistry, *Research programs), (*Thorium, Chemistry), (*Uranium, Chemistry), (*Plutonium, Chemistry), Air, Chemical analysis, Deuterium compounds, Nitrogen, Oxidation, Polyethylenes, Solids, Surfaces, Tritium.

For abstract, see NSA 28 05, number 10631.

UCID-16291/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
FAILURE OF A FIXED-CORE MODEL OF THE XENON MOLECULE TO DESCRIBE THE EXP 1 SIGMA /SUB G/, EXP 1 SIGMA /SUB U/, AND EXP 3 SIGMA /SUB U/ STATES.
R. M. Bevensee. 19 Jun 73, 13p
Contract W-7405-eng-48

Descriptors: (*Xenon, *Molecular structure), Energy levels.

For abstract, see NSA 28 06, number 15167.

UCRL-51355/GA PC$12.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
STUDY OF IRON SULFIDE (FE/SUB 1-DELTA/S) (0.906 GREATER THAN OR EQUAL TO 1 - DELTA GREATER THAN OR EQUAL TO 0.893) USING THE TECHNIQUE OF POLARIZED AND UNPOLARIZED NEUTRON DIFFRACTION.
J. A. Shideler. Apr 73, 199p
Contract W-7405-eng-48

Descriptors: (*Neutron spectrometers, *Calibration), Bragg reflection, Ferrimagnetism, Iron sulfides, Magnetic properties, Neutron beams, Neutron diffraction, Polarized beams, Vacancies.

For abstract, see NSA 28 04, number 10622.

UCRL-51375/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
THERMAL ANNEALING OF IRRADIATED LIH.
H. R. Leider, V. Teas, and C. M. Griffith. 12 Apr 73, 21p
Contract W-7405-eng-48

Descriptors: (*Lithium hydrides, *Physical radiation effects), Annealing, Bubbles, Density, Distribution, Hydrogen, Size.

For abstract, see NSA 28 05, number 11143.

Y-DK-108/GA PC$3.00/MF$1.45
Oak Ridge Y-12 Plant, Tenn. (Usa).
DETERMINATION OF MOCA IN ADIPRENE-MOCA MIXTURES BY GEL PERMEATION CHROMATOGRAPHY.
N. J. Williams, and R. W. Morrow. 12 Jul 73, 12p
Contract W-7405-eng-26

Descriptors: (*Organic chlorine compounds, *Chromatography), (*Amines, Chromatography), Binary mixtures, Polymerization, Polyurethanes, Quantitative chemical analysis.

For abstract, see NSA 28 06, number 15173.

7E. Radio and Radiation Chemistry

FRNC-TH-305/GA PC$5.45/MF$1.45
Paris Univ. (France).
STUDY OF THE CHEMICAL EFFECTS OF NEUTRON CAPTURE BY PARADIBROMOBENZENE.
D. Maes. 1971, 148p
In French. U.S. Sales Only.

Descriptors: (*Brominated aromatic hydrocarbons, *Hot atom chemistry), (*Organic bromine compounds, Hot atom chemistry), Annealing, Aromatics, Capture, Chemical radiation effects, Chemical reaction yield, Hydrolysis, Low temperature, Medium temperature, Multi-element separation, Neutron beams, Polymers, Radicals, Recoils, Retention, Solids, Solvent extraction.

For abstract, see NSA 28 04, number 07986.

FRNC-TH-306/GA PC$5.45/MF$1.45
Paris Univ. (France).
CHEMICAL CONSEQUENCES OF NEUTRON CAPTURE IN ORGANIC HALIDES. EFFECTS OF THE AGGREGATION STATE.
M. Mauguin. 1971, 123p
In French. U.S. Sales Only.

Descriptors: (*Bromine 80, *Isomeric transitions), (*Bromine 82, *Chemical state), Brominated aliphatic hydrocarbons, Chemical reaction yield, Hot atom chemistry, Isomeric nuclei, Binary mixtures, Capture, Equilibrium, Low temperature, Organic bromine compounds, Phase diagrams, Recoils, Solids, Binding energy, Bromine 79, Liquids, Medium temperature, Neutron beams, Neutron reactions, Radiolysis, Scavenging.

For abstract, see NSA 28 04, number 07987.

JAERI-M-5071/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
RADIATION-INDUCED EMULSION COPOLYMERIZATION OF TETRAFLUOROETHYLENE WITH PROPYLENE EMULSION COPOLYMERIZATION BY THE SHAKING AGITATION METHOD.
O. Matsuda, M. Ito, N. Suzuki, J. Okamoto, and A. Danno. Dec 72, 19p
In Japanese. U.S. Sales Only.

Descriptors: (*Fluorinated aliphatic hydrocarbons, *Chemical radiation effects), (*Propylene, Chemical radiation effects), (*Organic fluorine compounds, Chemical radiation effects), Copolymerization, Emulsions, Gamma radiation, Photon beams, Radiation chemistry.

For abstract, see NSA 28 04, number 07946.

JAERI-5028/GA PC$7.50/MF$1.45
Japan Atomic Energy Research Inst., Osaka. Osaka Lab.
FUNDAMENTAL STUDIES IN OSAKA LABORATORY FOR RADIATION CHEMISTRY. ANNUAL REPORT, APRIL 1, 1971--MARCH 31, 1972.
1973, 107p
In Japanese and English. U.S. Sales Only.

Descriptors: (*Radiation chemistry, *Research programs), Japan.

For abstract, see NSA 28 04, number 07933.

LA-5186/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
TIME- AND SPACE-RESOLVED PHOTOCHROMISM OF HYDRATION ELECTRONS PRODUCED DURING NANOSECOND RADIATION PULSES.
G. J. Berzins, K. S. Han, and B. W. Noel. Apr 73, 13p
Contract W-7405-eng-36

Descriptors: (*Aqueous solutions, *Radiolysis), Dosimetry, Pulsed irradiation, Radiation chemistry, Solvated electrons.

For abstract, see NSA 28 04, number 07947.

LBL-1687/GA PC$11.50/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
RECOIL TRITIUM REACTIONS WITH CYCLOHEXENE AND METHYLCYCLOHEXENE.
D. C. Fee. Jun 73, 189p
Contract W-7405-eng-48

Descriptors: (*Tritium, *Hot atom chemistry), (*Cycloalkenes, Hot atom chemistry), Atoms, Chemical reactions, Hydrogen sulfides, Medium temperature, Oxygen, Pressure dependence, Radicals, Recoils, Scavenging, Sulfur oxides, Temperature dependence.

For abstract, see NSA 28 05, number 10739.

MLM-2042/GA PC$5.45/MF$1.45
Mound Lab., Miamisburg, Ohio.
DECAY AND GROWTH TABLES FOR THE NATURALLY OCCURRING RADIOACTIVE SERIES (REVISED).
H. W. Kirby. 15 Jun 73, 77p
Contract AT-33-1-GEN-53

Descriptors: (*Radioisotopes, *Decay), Daughter products, Heavy nuclei, Natural radioactivity, Tables.

For abstract, see NSA 28 06, number 14103.

SRO-640-6/GA PC$3.25/MF$1.45
Georgia Univ., Athens. Dept. Of Chemistry.
RADIOLYSIS OF WATER IN A WIDE RANGE RADIOLYSIS SOURCE. PROGRESS REPORT, SEPTEMBER 1, 1972--AUGUST 31, 1973.
C. E. Melton. 15 Jun 73, 25p
Contract AT(38-1)-640

Descriptors: (*Nitrogen oxides, *Radiolysis), (*Water, Radiolysis), Anions, Chemical reactions, Electron beams, Radiation chemistry, Research programs, Scavenging.

For abstract, see NSA 28 06, number 12719.

8. EARTH SCIENCES AND OCEANOGRAPHY

8A. Biological Oceanography

AD-767 939/2GA PC$11.25/MF$1.45
Alaska Univ College Inst of Marine Science
ECOLOGICAL STUDIES ON ARCTIC SEA ICE ORGANISMS.
Progress rept. 1 May 71-30 Apr 72,
Rita A. Horner. Nov 72, 182p Rept no. R72-17
Contract N00014-67-A-0317-0003

Descriptors: (*Microorganisms, Sea ice), (*Marine biology, *Arctic Ocean), Plankton, Algae, Ecology, Nutrition, Chlorophylls, Sampling, Metabolism, Salinity, Alaska.
Identifiers: *Primary biological productivity.

Microscopic organisms form a brown layer, two to four cm thick, on the bottom surface of sea ice in the spring near Barrow, Ak. Phytoplankton and benthic microalgae have been studied to try to determine the origin and ultimate fate of ice organ-

isms. The three communities are described in terms of species composition, primary productivity, and standing stock. Salinity and nutrient concentrations are given for the ice and the seawater. (Author)

AD-768 180/2GA PC$3.00/MF$1.45
Naval Oceanographic Office Washington D C
DATA FROM A STUDY OF THE WHITE WHALE DISTRIBUTION IN THE NORTHERN SEAS OF THE USSR (MATERIALY K IZUCHENIYU RASPREDELENIYA BELUKHI V SEVERNYKH MORYAKH SSSR),
S. E. Kleinenberg, V. M. Belkovich, and A. V. Yablokov. 1973, 37p Rept no. NOO-Trans-539
Trans. of Polyarnyi Nauchno-Issledovatelskii Institut Morskogo Rybnogo Khozyaistva i Okeanofrafii. Trudy (USSR) v12 p127-145 1960, by V. Astvazaturov.

Descriptors: (*Cetacea, Arctic regions), Reviews, Distribution, Food, Abundance, Seacoast, Sea ice, USSR.
Identifiers: Translations, Animal migrations, Delphinapterus leucas.

The report presents a condensed bibliographical review of the distribution, migration, and habits of white whales (beluga) in the Arctic seas of the USSR. Data from the literature are amplified and verified by questionnaires, interrogations, and the authors' own observations. Reports and observations of white whale sightings are presented seasonally for each sea (White, Barents, Kara, Laptev, East Siberian, and Chukchi). The seasonal movements of whitel whales are summarized and analyzed. It is concluded that belugas are circumpolar in distribution; they frequent both coastal waters and the open sea influenced by ice conditions and food supply, and they winter both in open water and in leads (polynyas) among the ice.

AD-768 241/2GA Reprint
Alaska Univ College Inst of Marine Science
AN IN SITU METHOD FOR MEASURING PRIMARY PRODUCTIVITY OF ARCTIC SEA ICE ALGAE,
R. C. Clasby, Rita Horner, and Vera Alexander. 4 Dec 72, 4p Rept no. IMS-Contrib-180
Contract N00014-67-A-0317-0003, Grant NSF-GA-29299
Summary in French.
Availability: Pub. in Jnl. of the Fisheries Research Board of Canada, v30 n6 p835-838 1973.

Descriptors: (*Algae, Photosynthesis), (*Sea ice, Algae), Measurement, Sampling, Carbon, Chlorophylls, Nitrogen, Scuba divers, Arctic regions.
Identifiers: *Primary biological productivity.

With the use of scuba diving and a new 14C incubation chamber, the rates of carbon fixation by the algal community that lives within the undersurface of sea ice have been measured. Rates of primary productivity ranged from 7.67-mg C/sq m/hr near the peak of the bloom to a low of 0.30-mg C/sq m/hr just prior to the thaw period.

8B. Cartography

E73-11058/GA PC$3.00/MF$1.45
Honeywell, Inc., Minneapolis, Minn. Systems and Research Div.
AUTOMATIC PHOTOINTERPRETATION FOR LAND USE MANAGEMENT IN MINNESOTA.
Progress rept. no. 5,
George D. Swanlund, D. R. Pile, and Raymond E. Zirkle. Feb 73, 6p NASA-CR-133948
Contract NAS5-21742

Descriptors: Photointerpretation, Land use, Land management, Minnesota, Earth resources program, Multispectral band scanners, Lakes, Water resources.

The author has identified the following significant results. Progress is being made in the areas of sun angle and atmospheric effects on the data and its interpretation. The effort is aimed at correction using only navigation and calendar data needed for satellite operation and derivations from the MSS data. Water estimation of value to land planners and conservationists has been demonstrated with verification of performance by comparison with a concurrent study involving map planimetry, aerial photos, and field-checking. The satellite will provide seasonal and annual coverage with timely information in a way not now feasible by conventional methods. For example, the reference data were obtained using the most recent files, which date back to 1949, and from most recent photography taken in 1968. The calendar time involved was three to four months, which is a reflection on priority pressure on trained manpower available. ERTS-1 data can help relieve this problem by providing the needed information while freeing trained manpower for more appropriate parts of the effort.

E73-11059/GA PC$3.00/MF$1.45
Honeywell, Inc., Minneapolis, Minn. Systems and Research Div.
AUTOMATIC PHOTOINTERPRETATION FOR LAND USE MANAGEMENT IN MINNESOTA.
Progress rept., no. 6,
George D. Swanlund, and D. R. Pile. Apr 73, 15p NASA-CR-133949
Contract NAS5-21742

Descriptors: Land use, Land management, Minnesota, Photointerpretation, Earth resources program, Data processing, Lakes, Conservation.

The author has identified the following significant results. Primary conclusions from the lake acreage study are: (1) The ERTS-1 band 7 density range of 0-5 reliably indicates open water down to 2 acre size. (2) The density range 6-9 identifies swamps. (3) The depth of the water could not be determined. (4) Cloud shadows can be misread as lakes unless the clouds are detected. (5) ERTS-1 data would provide the information for classifying lakes and for monitoring fluctuations in lake area.

E73-11061/GA PC$3.50/MF$1.45
Honeywell, Inc., Minneapolis, Minn. Systems and Research Div.
AUTOMATIC PHOTOINTERPRETATION FOR LAND USE MANAGEMENT IN MINNESOTA.
Progress rept. no. 8,
George D. Swanlund, and D. R. Pile. Aug 73, 26p NASA-CR-133950
Contract NAS5-21742

Descriptors: Photointerpretation, Land management, Land use, Minnesota, Earth resources program, Cities, Water, Forests, Mines(Excavations).

The author has identified the following significant results. The Minnesota Iron Range area was selected as one of the land use areas to be evaluated. Six classes were selected: (1) hardwood; (2) conifer; (3) water (including in mines); (4) mines, tailings and wet areas; (5) open area; and (6) urban. Initial classification results show a correct classification of 70.1 to 95.4% for the six classes. This is extremely good. It can be further improved since there were some incorrect classifications in the ground truth.

E73-11065/GA PC$3.00/MF$1.45
Alaska Univ., College.
IDENTIFICATION , DEFINITION AND MAPPING OF TERRESTRIAL ECOSYSTEMS IN INTERIOR ALASKA.
Bimonthly progress rept. no. 7,
J. H. Anderson. 30 Sep 73, 8p NASA-CR-13552
Contract NAS5-21833

Descriptors: Ecosystems, Alaska, Mapping, Earth resources program, Vegetation, Snow cover.

The author has identified the following significant results. Two new, as yet unfinished vegetation maps are presented. These tend further to substantiate the belief that ERTS-1 imagery is a valuable mapping tool. Newly selected scenes show that vegetation interpretations can be refined through use of non-growing season imagery, particularly through the different spectral characteristics of vegetation lacking foliage and through the effect of vegetation structure on apparent snow cover. Scenes now are available for all test areas north of the Alaska Range except Mt. McKinley National Park. No support was obtained for the hypothesis that similar interband ratios, from two areas apparently different spectrally because of different sun angles, would indicate similar surface features. However, attempts to test this hypothesis have so far been casual.

8C. Dynamic Oceanography

AD-767 914/5GA Reprint
Oregon State Univ Corvallis School of Oceanography
AOU (APPARENT OXYGEN UTILIZATION) AS INDICATOR OF WATER-FLOW DIRECTION IN THE CENTRAL NORTH PACIFIC,
Saul Alvarez-Borrego, and P. Kilho Park. 1 May 71, 10p Rept no. REF 72-22
Contract N00014-67-A-0369-0007, Grant NSF-GA-1281
Supported in part by Grant NSF-GA-12113.
Availability: Pub. in Jnl. of the Oceanographical Society of Japan, v27 n4 p142-150 Aug 71.

Descriptors: (*Ocean currents, *Pacific Ocean), Oxygen, Salinity, Phosphates, Density, Numerical analysis.
Identifiers: North Pacific Ocean.

Salinity, preformed phosphate and AOU (Apparent Oxygen Utilization) distribution on the sigma-t surfaces of 26.8 and 27.3 of the central North Pacific Ocean, as well as the topography of these density surfaces, were studied. The direction of water flow suggested by the AOU distribution on these density surfaces was compared to that indicated by the acceleration potential contours on the delta sub t = 125 cl/ton and delta sub t = 80 cl/ton surfaces drawn by Joseph L. Reid, Jr. The disagreements were explained in terms of mixing and possible gradients of primary production at the sea surface. On the 26.8 sigma-t surface a southward flow connecting the westward flow south of the Aleutian chain and the eastward flow farther south, between 175 and 180 degrees is suggested by the AOU distribution but is not implied by the acceleration potential contours. If the circulation pattern at this density surface is similar to that at the sea surface, this southward flow is very likely to be real. (Author)

AD-767 916/0GA Reprint
Oregon State Univ Corvallis School of Oceanography
A COMPARISON BETWEEN WIND AND CURRENT OBSERVATIONS OVER THE CONTINENTAL SHELF OFF OREGON, SUMMER 1969,
Adriana Huyer, and June G. Pattullo. 16 Mar 72, 7p Rept no. Ref 72-21
Contract N00014-67-A-0369-0007, Grant NSF-GA-1435
Availability: Pub. in Jnl. of Geophysical Research, v77 n18 p3215-3219 Jun 72.

Descriptors: (*Ocean currents, *Wind), Oregon, Continental shelves, Periodic variations, Pacific Ocean.
Identifiers: *Air water interactions.

Wind and current observations made over the continental shelf off Oregon in the summer of 1969 are compared. It is demonstrated that the wind and current are related at periods longer than 2 days. The wind and current data are both filtered to suppress variations of diurnal and higher frequencies.

The current behaves similarly to the wind when the wind varies slowly. The amplitude of the current fluctuations seems to depend on the stratification of the water. The current is roughly parallel to the local bottom contours. (Author)

AD-767 917/8GA Reprint
Oregon State Univ Corvallis School of Oceanography
SURFACE CURRENTS OFF OREGON AS DETERMINED FROM DRIFT BOTTLE RETURNS,
Bruce Wyatt, Wayne V. Burt, and June G. Pattullo. 15 Mar 72, 8p Rept no. Ref 72-23
Contract N00014-67-A-0369-0007
Revision of report dated 24 Dec 71.
Availability: Pub. in the Jnl. of Physical Oceanography, v2 n3 p286-293 Jul 72.

Descriptors: (*Ocean currents, *Pacific Ocean), Oregon, Flow fields.
Identifiers: North Pacific Ocean, Seasonal variations, Air water interactions, Ocean surface.

It is generally known that surface currents off Oregon flow equatorward in summer when winds are from the northwest and poleward in the winter when winds are from the south. A detailed pattern of surface currents has been derived from drift bottle returns and releases observed during a 10-year study from 1961-71. A total of 21,285 drift bottles were released within 165 n mi of the Oregon coast, of which 2937 bottles were eventually recovered. The annual cycle of surface currents indicated from these returns was as follows: Northward--October through February, Southward--May through August, Variable--March, April and September. (Modified author abstract)

AD-768 229/7GA Reprint
Rosenstiel School of Marine and Atmospheric Science Miami Fla
SOME EVIDENCE FOR LONG-PERIOD BAROTROPIC WAVES IN THE FLORIDA CURRENT,
Walter Duing. 31 Jan 73, 5p Rept no. Contrib-1631
Contract N00014-67-A-0201-0013, Grant NSF-GD-31576
Availability: Pub. in Jnl. of Physical Oceanography, v3 n3 p343-346 Jul 73.

Descriptors: (*Ocean currents, Florida Strait), Transport properties, Temperature.
Identifiers: Barotropic waves, Florida Current.

A large number of vertical profiles of horizontal current were observed during the last two years in the Florida Straits. For a two-week set of observations, it is found that westward meandering of the Florida Current is accompanied by a reduction of the overall volume transport through the Straits of Florida, deep southward flow, and a deepening of the midstream isothermal field. The meandering motion for the observed case is interpreted as a predominantly barotropic wave with a time scale of several days. (Author)

AD-768 318/8GA PC$4.75/MF$1.45
Michigan State Univ East Lansing Dept of Natural Science
A WAVE AND CURRENT INVESTIGATION IN THE NEARSHORE ZONE.
Final rept. Jun 66-Mar 73,
William L. Wood, Jr. Jun 73, 158p
Contract N00014-68-A-0109-0002
Prepared in cooperation with Purdue Univ., Lafayette, Ind. Dept. of Geosciences.

Descriptors: (*Ocean waves, Beaches), Interactions, Velocity, Turbulence, Stability, Mathematical prediction, Flowmeters, Friction, Energy, Computer programs.
Identifiers: Surf zone, Breaking waves.

The report is the final report on wave and current investigations in the nearshore zone. A spatial resolution method has been developed for determining wave lengths in the surf. This system prevents the error introduced due to rapidly transforming waves which arises in conventional calculated wave length determinations. Subsurface photographic studies on particle velocities in breaking waves has indicated both horizontally dominant and vertically dominant flow paths beneath the crests of breaking waves. Breaker height decay analysis has shown that turbulence due to breaking dominates bottom friction in the nearshore zone. Likewise a prediction equation is generated which will predict the expotential decay of wave height as a function of distance shoreward from the break point. A complete wave shape classification system has been developed for evaluating stability and energetics of the surf zone. This system is used in conjunction with a two-dimensional time projection of the free surface to evaluate nearshore surface wave behavior. (Author)

COM-73-50834/3GA MF$1.45
National Ocean Survey, Rockville, Md.
TIDE TABLES - HIGH AND LOW WATER PREDICTIONS, 1974. EUROPE AND WEST COAST OF AFRICA INCLUDING THE MEDITERRANEAN SEA.
1973, 219p NOAA-73090402
Paper copy available from National Ocean Survey, Washington, D.C. 20852 $2.00.

Descriptors: (*Ocean tides, Tables(Data)), Predictions, Coasts, Diurnal variations, Europe, Africa, Mediterranean Sea.

The edition of the Tide Tables, Europe and West Coast of Africa contains full daily predictions for 37 reference stations and differences and ranges for about 1,000 stations. It contains also a table for obtaining the approximate height of the tide at any time, a table of local mean time of sunrise and sunset for every fifth day of the year for different latitudes, a table for the reduction of local mean time to standard time, and a table of the Greenwich mean time of the moon's phases, apogee, perigee, greatest north and south and zero declination, and the time of the solar equinoxes and solstices.

N73-29365/6GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
A DETERMINATION OF THE EARTH TIDAL AMPLITUDE AND PHASE FROM THE ORBITAL PERTURBATIONS OF THE BEACON EXPLORER C SPACECRAFT.
D. E. Smith, R. Kolenkiewicz, and P. J. Dunn. Apr 73, 8p NASA-TM-X-70420, X-592-73-161
Subm-Submitted for Publication.

Descriptors: *Earth tides, *Explorer 27 satellite, *Ocean currents, Amplitudes, Love waves, Orbit perturbation.

For abstract, see STAR 1120

PB-223 972/1GA Not available NTIS
National Oceanic and Atmospheric Administration, Seattle, Wash. Pacific Oceanographic Labs.
ON THE ESTIMATION OF A COMPLEX-VALUED COHERENCY FUNCTION USING A DISCRETE FOURIER TRANSFORM,
David Halpern. 1973, 9p NSF/IDOE-73-33
Proceedings of the Conference on Probability and Statistics in Atmospheric Science (3rd) 19-22 Jun 73.

Descriptors: (*Ocean waves, *Time series analysis), Fourier transformation, Spectrum analysis, Stochastic processes, Graphic methods.

The aim of the paper is to describe a complex-valued coherency function: its definition, how to compute it using a discrete Fourier Transform, and how to interpret it. Described are the auto spectrum, coherency analysis, the numerical experiments, and vertical coherence of near surface inertial period motion.

RLO-2225-T-21-10/GA PC$3.25/MF$1.45
Washington Univ., Seattle. Dept. Of Oceanography.
SYNOPTIC MEASUREMENTS OF CURRENTS AND SEDIMENT TRANSPORT ON THE CONTINENTAL SHELF.
R. W. Sternberg. 30 Apr 73, 21p
Contract AT(45-1)-2225

Descriptors: (*Pacific ocean, *Sediments), Coastal waters, Columbia river, Currents, Deposition, Depth, Distribution, Oceanography, Oregon, Photography, Pressure measurement, Seawater, Silt, Tide, Time dependence, Washington.

For abstract, see NSA 28 04, number 10608.

8E. Geodesy

COM-73-11534/7GA PC$2.75/MF$1.45
National Oceanic and Atmospheric Administration, Miami, Fla. Atlantic Oceanographic and Meteorological Labs.
GRAVITY EQUIPMENT EVALUATION RANGE OFF CAPE KENNEDY, FLORIDA.
Technical memo.,
B. G. Bassinger, and N. A. Prahl. Jul 73, 20p
NOAA-TM-ERL-AOML-20 NOAA-73090403
Prepared in cooperation with National Ocean Survey, Washington, D.C.

Descriptors: (*Gravity, Cape Kennedy), Ocean bottom, Continental shelves, Gravimeters, Gravity reduction, Cape Canaveral.

Sea floor gravity stations were established in the area off Cape Kennedy, Florida, to provide an operational testing facility for the evaluation of sea-surface gravity meters on ships operated by the National Oceanic and Atmospheric Administration. Forty-four sea floor gravity observations spaced over an area of approximately 720 sq km (210 sq nm) were occupied on the continental shelf between 28 degrees 52 minutes N and 29 degrees 08 minutes N from 80 degrees 18 Minutes W to 80 degrees 32 minutes W. This report summarized the survey operation and data reduction and presents tabulated gravity data. Contour maps of the gravity surface reduced to mean low water and free-air anomaly are included. (Author)

8F. Geography

E73-11066/GA PC$3.00/MF$1.45
Alaska Univ., Palmer.
IDENTIFICATION OF PHENOLOGICAL STAGES AND VEGETATIVE TYPES FOR LAND USE CLASSIFICATION.
Bimonthly progress rept. no. 7,
Jay D. McKendrick. 1 Oct 73, 6p NASA-CR-135522
Contract NAS5-21833

Descriptors: Vegetation, Land use, Phenology, Alaska, Earth resources program, Plants(Botany), Thematic mapping.

The author has identified the following significant results. Digital signatures derived from the CDU (Color Display Unit) are comparable to those taken from the printouts. Therefore, using the CDU to derive signatures should be more efficient, since there is considerable time required in turn around with the computer and time required locating vegetation stands on the printout.

N73-29384/7GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

REMOTE SENSING: THE APPLICATION OF SPACE TECHNOLOGY TO THE SURVEY OF THE EARTH AND ITS ENVIRONMENT.
R. J. Schertler. 1973, 13p NASA-TM-X-68266
Conf-Presented at Natl. Conv. Of the Natl. Sci. Teachers Assoc., Detroit, Mich., 30 Mar. - 4 Apr. 1973.

Descriptors: *Earth environment, *Earth resources program, *Remote sensors, Agriculture, Earth resources survey program, Earth resources technology satellites, Forests, Geology, Oceanography, Spectral signatures.

For abstract, see STAR 1120

N73-29385/4GA PC$3.75/MF$1.45
Purdue Univ., Lafayette, Ind. Lab. for Applications of Remote Sensing.
AN ANALYSIS OF MILWAUKEE COUNTY LAND USE.
W. Todd, and P. Mausel. Feb 73, 31p NASA-CR-133643, LARS-INFORM-NOTE-022773
Contract NGL-15-005-112

Descriptors: *Earth resources technology satellite a, *Land use, *Remote sensors, *Wisconsin, Cities, Data processing, Earth resources program, Forests, Vegetation, Water resources.

For abstract, see STAR 1120

N73-29387/0GA PC$3.00/MF$1.45
Natural Environment Research Council, London (England). Unit of Coastal Sedimentation.
NERC REMOTE SENSING FLIGHTS: SOUTH HARRIS.
Report on Multispectral Photography.
J. Moore. 1973, 4p UCS/72/13

Descriptors: *Multispectral photography, *Penetration, *Water, Aerial photography, Photographic film, Tides.

For abstract, see STAR 1120

8G. Geology and Mineralogy

AD-767 807/1GA Reprint
Lamont-Doherty Geological Observatory Palisades N Y
THE GEOLOGY OF THE OCEANIC CRUST: COMPRESSIONAL WAVE VELOCITIES OF OCEANIC ROCKS.
Journal article,
Paul J. Fox, Edward Schreiber, and J. J. Peterson.
30 Jan 73, 20p Rept no. LDGO-1974
Contract N00014-67-A-0108-0004
Revision of report dated 26 Jan 73.
Availability: Pub. in the Jnl. of Geophysical Research, v78 n23 p5155-5172, 10 Aug 73.

Descriptors: (*Ocean bottom, Rock(Geology)), (*Seismic waves, Ocean bottom), Basalt, Terrain.
Identifiers: Gabbro, Peridotite, Rock mechanics, *Oceanic crust, Seismic refraction.

A diverse suite of rocks has been recovered from escarpments in the North Atlantic: basalts, dolerites, meta-basalts (zeolite and greenschist-facies), meta-dolerites (greenschist facies), gabbros, meta-gabbros (greenschist- and amphibolite-facies), serpentinized peridotite, and actinolitic rocks. Since these rocks have been sampled from tectonic escarpments, it is difficult, based on petrology alone, to separate those rock types resulting from localized tectonization from those rocks reflecting regional geologic trends. In an attempt to resolve this ambiguity, the compressional wave velocities (confining pressure range 1 bar to 7 kb) of representative samples were measured as a function of pressure. Compressional wave velocity measurements at confining pressures equivalent to the in situ conditions were compared with published seismic refraction results. These comparisons are compatible with an oceanic basement composed of basalt, dolerite, and meta-basalt. (Modified author abstract)

AD-768 040/8GA PC$3.00/MF$1.45
IBM Thomas J Watson Research Center Yorktown Heights N Y
THE RANDOM MODEL IN FLUVIAL GEOMORPHOLOGY.
Technical rept.,
J. S. Smart. Aug 73, 43p Rept no. TR-10
Contract N00014-70-C-0188

Descriptors: (*Drainage, Numerical analysis), Topology, Stochastic processes.
Identifiers: Geomorphology, Watersheds.

The paper describes a model of drainage basin composition that is primarily based on two postulates suggested by investigations of the role of randomness in drainage network development. The postulates are: (1) the topology of channel networks is random; (2) link lengths are independent random variables drawn from a common distribution. A third postulate, introduced to explain areal properties, is that the dimensionless parameter K studied by Melton and Shreve is approximately unity. Examples of the appplication of the random model in description, estimation, and explanation of drainage basin properties are given. (Author)

AD-768 284/2GA PC$5.50/MF$1.45
Woods Hole Oceanographic Institution Mass
SEDIMENTARY PROCESSES ON THE CONTINENTAL SLOPE OFF NEW ENGLAND.
Technical rept.,
Joseph Chad Ilvaine. Sep 73, 215p Rept no. WHOI-73-58
Contract N00014-66-C-0241
Doctoral thesis.

Descriptors: (*Continental shelves, Sedimentation), Atlantic Ocean, Marine geology, Sedimentary rock, Erosion, Ocean bottom sampling, Ocean bottom topography, Theses.
Identifiers: *Sediment water interactions, *Continental slopes, Cape Cod, Sediment transport, Seismic reflection, Bathymetry, Sesmic profiles.

A detailed study of a small (5000 sq km) area of the continental slope south of Cape Cod, Massachusetts, was conducted. Bathymetry, 3.5 kHz profiles, seismic profiles, suspended sediment analysis, bottom photographs, television, laboratory flume experiments, studies of surface sediments, and piston cores were combined to form the basis for understanding the sedimentary processes which control transportation, deposition, and erosion of sediments, and the geomorphic features of the continental slope. (Modified author abstract)

AD-768 300/6GA PC$3.00/MF$1.45
Naval Oceanographic Office Washington D C
THE GEOMORPHOLOGY OF JOHNSTON ATOLL.
Technical rept.,
Stanley A. Ashmore. Jul 73, 38p Rept no. NOO-TR-237

Descriptors: (*Johnston Island, Geology), Coral reefs, Terrain.
Identifiers: *Geomorphology, Submarine topographic features, Sea level.

Johnston Atoll (16 degrees 44 minutes N., 169 degrees 30 minutes W.) is one of the approximately 400 annualr reef forms that have been given the name atoll. Johnston Atoll, however, differs from most other atolls in having an outer reef that extends around only one quarter of its submarine platform. Two hypotheses have been proposed to account for the apparent incompleteness of Johnston Atoll. Either the atoll has been tilted, or lowered sea levels have allowed a portion of the atoll to be removed. Testing both hypotheses against detailed hydrographic survey data indicates that the sea-level-change hypothesis is the more likely. The sea-level-change hypothesis is supported by the existence of two distinct submarine terraces, one at approximately 5 fathoms, and the other at approximately 10 fathoms. In addition to supporting the sea-level-change hypothesis, the submarine terraces provide potentially valuable evidence for determining times and elevations for former worldwide sea levels. (Author)

COM-73-11528/9GA Reprint
Wisconsin Univ., Madison. Dept. of Geology and Geophysics.
GEOLOGIC CROSS SECTIONS DERIVED FROM SEISMIC PROFILES AND SEDIMENT CORES FROM SOUTHERN LAKE MICHIGAN.
Geophysics and polar research,
R. P. Meyer, J. A. Lineback, and D. L. Gross.
1972, 46p WIS-SG-72-328, Contrib-286 NOAA-73070207
Pub. in Environmental Geology Notes, n54 46p Aug 72.

Descriptors: (*Lake Michigan, Stratigraphy), Profiles, Sediments, Great lakes, Glacial till, Moraines, Cores, Topography.
Identifiers: Sea Grant program, Seismic profiles.

High-resolution seismic profiles and cores of bottom sediments have been used in the construction of geologic cross sections of southern Lake Michigan. Major stratigraphic units of the Pleistocene and the surface of the underlying Paleozoic bedrock can readily be distinguished. Cross sections in the northern part of southern Lake Michigan (near Milwaukee, Wisconsin) cross the Mid-lake High. They show high relief on the bedrock surface, differentiate a thick glacial till, and indicate that in this area the Lake Michigan Formation is confined to low spots on the lake floor. A north-south cross section of the area shows a thick terminal moraine-like accumulation of till south of Milwaukee that pinches out southward. Cross section across the central part of the southern lake basin show that the Lake Michigan Formation is thick in the deep central part of the basin and in a band along the eastern shore. Cross sections in the extreme southern part of the lake indicate the Lake Michigan Formation thins southward. They also show that the formation is thick along the eastern shore but absent in the southwestern corner of the lake. (Author)

COO-1599-65/GA PC$3.00/MF$1.45
Union Carbide Corp., Tarrytown, N.Y. (Usa). Michigan State Univ., Hickory Corners. W. K. Kellogg Biological Station.
CLOSE-INTERVAL FRACTIONATOR FOR SEDIMENT CORES.
A. W. Fast, and R. G. Wetzel. 1971, 9p
Contract AT(11-1)-1599

Descriptors: (*Sediments, *Sampling), Boreholes.

For abstract, see NSA 28 06, number 15136.

E73-11049/GA PC$3.00/MF$1.45
Iowa Univ., Iowa City.
UTILIZING ERTS-1 IMAGERY FOR TECTONIC ANALYSIS THROUGH STUDY OF THE BIGHORN MOUNTAINS REGION.
Progress rept. 16 Mar-15 Sep 73,
Richard A. Hoppin. 15 Sep 73, 9p NASA-CR-133870
Contract NAS5-21852

Descriptors: Tectonics, Geology, Bighorn Mountains(MT-WY), Earth resources program, Annual variations, Mapping.

The author has identified the following significant results. Comparisons of imagery of three seasons, late summer-fall, winter, and spring indicate that for this region fall imagery is the best for overall geologic analysis. Winter scenes with light to

moderate snow cover provide excellent topographic detail owing to snow enhancement, lower sun angle, and clarity of the atmosphere. Spring imagery has considerable reduction of tonal contrast owing to the low reflecting heavy green grass cover which subdues lithologic effects; heavy snow cover in the uplands masks topography. Mapping of geologic formations is impractical in most cases. Separation into tonal units can provide some general clues on structure. A given tonal unit can include parts of several geologic formations and different stratigraphic units can have the same tonal signature. Drainage patterns and anomalies provide the most consistent clues for detecting folds, monoclines, and homoclines. Vegetation only locally reflects lithology and structure. False color infra-red 9x9 transparencies are the most valuable single imagery. Where these can be supplemented by U-2 color infrared for more detailed work, a tremendous amount of information is available. Adequately field checking such a large area just in one scene is the major logistic problem even in a fairly well known region.

LA-5129/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
PETROGRAPHY OF SOME ROCK TYPES OF THE PRECAMBRIAN BASEMENT NEAR THE LOS ALAMOS SCIENTIFIC LABORATORY GEOTHERMAL TEST SITE, JEMEZ MOUNTAINS, NEW MEXICO.
P. C. Perkins. Jun 73, 12p
Contract W-7405-eng-36

Descriptors: (*Geothermal energy, *Site selection), (*Rocks, *Petrology), Granites.

For abstract, see NSA 28 05, number 10895.

N73-29378/9GA PC$7.50/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
WHAT DO YOU KNOW ABOUT TEKTITES .
G. G. Vorobyev. Aug 73, 107p NASA-TT-F-15052
Contract NASW-2481
Tran-Transl. Into English from Nauka Press, 1966 112 p.

Descriptors: *Geology, *Tektites, Extraterrestrial matter, Meteorites, Moldavite.

For abstract, see STAR 1120

N73-29383/9GA PC$4.00/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
THE EFFECT OF THE MICROFLORA ON EXOGENOUS DYNAMICS (WEATHERING AND CRUST DEVELOPMENT).
W. E. Krumbein. Aug 73, 37p NASA-TT-F-15032
Contract NASW-2481
Tran-Transl. Into English from Geol. Rundschau (Bonn), V. 58, 1969 p 333-363.

Descriptors: *Earth crust, *Plants (Botany), *Weathering, Iron compounds, Lichens, Limestone.

For abstract, see STAR 1120

N73-29389/6GA PC$4.00/MF$1.45
Danish Meteorological Inst., Charlottenlund. Geophysical Section.
THE IGDLORSSUIT GEOMAGNETIC VARIATION ANOMALY IN THE RIFT-FAULT ZONE OF NORTHERN WEST GREENLAND.
J. Wilhjelm, and E. Friis-christensen. 1973, 36p R-35, ISBN-87-7478-081-6

Descriptors: *Geological faults, *Greenland, *Magnetic anomalies, Basalt, Continental drift, Earth crust, Variations.

For abstract, see STAR 1120

PB-223 727/9GA PC-GPO/MF$1.45-NTIS
Bureau of Mines, Washington, D.C.
AN ECONOMIC APPRAISAL OF THE SUPPLY OF COPPER FROM PRIMARY DOMESTIC SOURCES.
Information circular,
Harold J. Bennett, Lyman Moore, Lawrence E. Welborn, and Joseph E. Toland. Aug 73, 169p
BuMines-IC-8598
Prepared in cooperation with Intermountain Field Operation Center, Denver, Colo.
Paper copy available from GPO $2.10 as stock no. 2404-01416.

Descriptors: (*Mineral economics, *Copper), Supply(Economics), Economic analysis, Cost analysis, Cost estimates, Production, Resources, Byproducts, Production rate.

The study evaluates the potential supply of primary copper from known domestic resources; estimates of the quantity and quality of the resources and the associated byproduct content are listed. It includes a tonnage-price relationship indicating the quantity of copper and contained byproducts of gold, silver, and molybdenum which could be economically produced from known deposits at various copper prices and rates of return on the required capital investment. Estimated costs of production are based on detailed capital and operating costs for exploration, development, mining, concentrating, transporting, smelting, and refining the copper.

PEL-227/GA PC$3.75/MF$1.45
Atomic Energy Board, Pretoria (Union of South Africa).
PEGMATITE DEPOSITS IN THE REPUBLIC OF SOUTH AFRICA.
J. W. Von Backstroem. Mar 73, 31p
U.S. Sales Only.

Descriptors: (*Pegmatites, *Geologic deposits), Beryllium, Bismuth, Distribution, Lithium, Niobium, Rare earths, South africa, Tantalum.

For abstract, see NSA 28 05, number 10846.

RLO-2227-T-9-7/GA PC$3.00/MF$1.45
Oregon State Univ., Corvallis (Usa). Dept. Of Soil Science.
PHYSICO-CHEMICAL PROPERTIES OF SOILS FROM VOLCANIC ASH. FINAL REPORT.
M. E. Harward. 26 Mar 73, 9p
Contract AT(45-1)-2227

Descriptors: (*Soils, *Chemical properties), Activation analysis, Physical properties.

For abstract, see NSA 28 04, number 10610.

RLO-2227-T-9-8/GA PC$7.75/MF$1.45
Oregon State Univ., Corvallis (Usa). Dept. Of Soil Science.
CATION RETENTION AND SOLUTE TRANSPORT RELATED TO POROSITY OF PUMICEOUS SOILS.
W. H. Doak. Jun 72, 116p
Contract AT(45-1)-2227

Descriptors: Cations, Diffusion, Porosity, Soils.

For abstract, see NSA 28 04, number 10611.

UCRL-51361/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
COMPUTER PROGRAM UKO.
A. E. Ratcliffe, and J. W. White. 29 Mar 73, 41p
Contract W-7405-eng-48

Descriptors: (*Computer codes, *U codes), (*Rocks, *Stresses), Elasticity, Finite difference method, Plasticity.

For abstract, see NSA 28 04, number 10509.

USGS-474-162/GA PC$5.45/MF$1.45
Geological Survey, Denver, Colo.
ELECTRICAL DISPERSION CHARACTERISTICS OF SELECTED ROCK AND SOIL SAMPLES FROM THE NEVADA TEST SITE.
W. R. Eberle, and R. C. Bigelow. Jun 73, 56p
Contract AT(29-2)-474

Descriptors: (*Nevada test site, *Geology), Dielectric properties, Electric conductivity, Quantity ratio, Rocks, Sampling, Soils, Time dependence, Variations, Water.

For abstract, see NSA 28 04, number 08196.

USGS-474-164/GA PC$4.00/MF$1.45
Geological Survey, Denver, Colo.
BIBLIOGRAPHY OF PUBLISHED REPORTS BY U.S. GEOLOGICAL SURVEY PERSONNEL ON THE GEOLOGY AND HYDROLOGY OF THE AMCHITKA SUPPLEMENTARY TEST AREA, ALEUTIAN ISLANDS, ALASKA, 1969--1972.
J. P. Ohl. Jun 73, 17p
Contract AT(29-2)-474

Descriptors: (*Amchitka island area, *Geology), Bibliographies, Hydrology.

For abstract, see NSA 28 04, number 08197.

USGS-474-165/GA PC$4.00/MF$1.45
Geological Survey, Denver, Colo.
BIBLIOGRAPHY OF PUBLISHED REPORTS BY U.S. GEOLOGICAL SURVEY PERSONNEL ON THE GEOLOGY AND HYDROLOGY OF THE CENTRAL NEVADA TEST AREA, NYE COUNTY, NEVADA, 1968--FIRST QUARTER 1973.
J. P. Ohl. Jun 73, 13p
Contract AT(29-2)-474

Descriptors: (*Nevada test site, *Geology), Bibliographies, Hydrology.

For abstract, see NSA 28 04, number 08198.

8H. Hydrology and Limnology

AD-768 837/4GA PC$4.50/MF$1.45
Louisiana State Univ Baton Rouge Coastal Studies Inst
THREE-DIMENSIONAL FLOW AND SEDIMENT TRANSPORT AT RIVER MOUTHS.
Technical rept.,
William R. Waldrop, and Richard C. Farmer. Sep 73, 144p Rept no. TR-150
Contract N00014-69-A-0211-0003

Descriptors: (*Rivers, Three-dimensional flow), (*Deltas, Three-dimensional flow), Flow fields, River currents, Ocean currents, Mathematical models, Computer programs.
Identifiers: *Sediment transport, Suspended sediments.

Three-dimensional flow processes of a river emptying into the sea were analyzed. The basic equations which were derived to describe this flow included the effects of buoyancy caused by density differences between fresh and salt water, inertia of river and coastal currents, and differences in hydrostatic head throughout the mixing region. Turbulence effects were included through an appropriate eddy viscosity model. Combinations of river stages and tidal currents were represented as systems of steady-state flow fields. A numerical procedure was developed and implemented on a digital computer for the solution of the equations. This numerical procedure is classified as an asymptotic time-dependent finite-difference technique but includes certain features of a relaxation technique. Computed flow fields were used to track a distribution of nominal particles representing the suspended load of the river as determined from field data. Deposition of these particles was primarily governed by convective processes and particle settling velocities, which included the ef-

fect of a local turbulence level. Deposition rates were used to compute deltaic growth. Results were compared to a delta for which experimental data were available. (Author)

BMI-171-151/GA PC$3.00/MF$1.45
Battelle Columbus Labs., Ohio.
AMCHITKA BIOENVIRONMENTAL PROGRAM. LIMNOLOGY OF AMCHITKA ISLAND, ALASKA. ANNUAL PROGRESS REPORT, JULY 1, 1971--JUNE 30, 1972.
T. J. Birch. Apr 73, 45p
Contract AT(26-1)-171

Descriptors: (*Amchitka island area, *Hydrology), (*Cannikin event, *Seismic effects), Fresh water, Hydrosphere, Lakes, Nuclear explosions.

For abstract, see NSA 28 04, number 08106.

BNWL-1739/GA PC$7.75/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
HANFORD WELLS.
K. L. Kipp, V. L. McGhan, and D. W. Damschen.
Jun 73, 115p
Contract AT(45-1)-1830

Descriptors: (*Hapo, *Hydrology), Data.

For abstract, see NSA 28 06, number 12874.

COM-73-11503/2GA Reprint
Wisconsin Univ., Madison.
THE UNIVERSITY OF WISCONSIN SEA GRANT PROGRAM,
Robert A. Ragotzkie. 1970, 6p WIS-SG-71-301
NOAA-73070201
Pub. in Limnos, v3 n3 p9-12 Fall 1970.

Descriptors: (*Lake Superior, *Limnology), (*Oceanography, Research management), (*Marine engineering, Research management), Universities, Wisconsin, Great Lakes.
Identifiers: *Sea Grant program.

The author explains that Sea Grant at Wisconsin is a wideranging and varied program in marine research and education. Studies are designed to gain an understanding and to seek ways of alleviating deterioration of the Great Lakes. As a systems-oriented program, its efforts are directed not only toward providing state, local and federal government units with management information for policy programs, but also toward encompassing a multi-faceted subject into a single program.

COM-73-11585/9GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
BIOCHEMICAL OXYGEN DEMAND. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Edward J. Lehmann. Oct 73, 137p NTIS-WIN-73-042

Descriptors: (*Biochemical oxygen demand, *Bibliographies), (*Water quality, Biochemical oxygen demand), Sewage treatment, Limnology, Water pollution.

The NTISearch bibliography contains 132 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The bibliography presents a broad range of abstracts dealing with biochemical oxygen demand (BOD) in sewage treatment and limnology. These studies include topics on BOD reduction, models, and biological factors. (Author)

COM-73-11623/8GA Reprint
National Weather Service, Silver Spring, Md. Office of Hydrology.
AERIAL MEASUREMENT OF SNOW WATER EQUIVALENT BY TERRESTRIAL GAMMA RADIATION SURVEY,
E. L. Peck, and V. C. Bissell. 1973, 17p NOAA-73071205

Descriptors: (*Snow, Moisture content), Hydrometeorology, Hydrology, Gamma ray spectroscopy, Remote sensing.

Research studies measuring terrestrial gamma radiation from aircraft to determine snowpack water equivalent are reported. Both spectral and total count data were collected using 10.16 cm by 10.16 cm (4 in.) NaI (Tl) scintillation crystals. Extensive ground truth data were used in conjunction with count rates obtained to develop empirical procedures relating count attenuation with snow water equivalent. Soil moisture, altitude, and air density corrections were made in the course of development of the method. Spectral relations are compared with theoretical. Significant limitations on data collection and interpretation imposed by the presence of radon gas are discussed. Because of radon gas interference in the total count, the spectral method gives the best measurement of water equivalent in the snow-flood sensitive North-Central United States. (Author)

E73-11082/GA PC$3.00/MF$1.45
Purdue Univ., Lafayette, Ind. Lab. for Applications of Remote Sensing.
A STUDY OF THE UTILIZATION OF ERTS-1 DATA FROM THE WABASH RIVER BASIN.
Bimonthly progress rept. 1 Jul-31 Aug 73,
David A. Landgrebe. 31 Aug 73, 5p NASA-CR-135539
Contract NAS5-21773

Descriptors: Crop identification, Wabash River Basin(IL-IN-OH), Soil mapping, Atmospheric models, Earth resources program, Multispectral band scanners.

The author has identified the following significant results. The crop identification effort produced results indicating difficulty in discriminating cotton and soybeans in the Missouri area in the late August, September-October period. The use of prior probabilities in classification was shown to increase performance significantly. The use of temporal data was observed to improve classification accuracy for September 14 and October 2 data but not for August 26 data. Geometric correction and temporal overlay processing of ERTS-1 data proved to be very valuable for field location and relationship of fields from one time to another. Precision geometric correction of ERTS-1 data was achieved using manually derived ground control checkpoints.

LA-UR-73-499/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ANOTHER RIO GRANDE FOR NEW MEXICO.
L. P. Reinig, R. I. Brasier, B. J. Donham, and W. S. Gregory. Apr 73, 13p CONF-730438-1
Contract W-7405-eng-36

Descriptors: (*New mexico, *Water), Brines, Economics, Electric power, Environment, Ground water, Rivers, Salinity, Underground.

For abstract, see NSA 28 06, number 15022.

N73-29382/1GA PC$3.00/MF$1.45
Scripta Technica, Inc., Washington, D.C.
HYDROGRAPHIC INTERPRETATION OF ORBITAL PHOTOGRAPHS AND POSSIBILITY OF USING THEM IN HYDROLOGIC MAPPING.
T. G. Svatkova. Jul 73, 9p NASA-TT-F-14974
Contract NASW-2484
Tran-Transl. Into English of Inst. Of Space Res., Acad. Sci. Ussr, Moscow Conf. Paper. Conf-Presented at the Meeting of the Soviet-AM. Working Group on Remote Sensing of the Nat. Environ. From Space, 12-17 Feb. 1973 15 p.

Descriptors: *Mapping, *Photointerpretation, *Piedmonts, *Spaceborne photography, *Steppes, Hydrology, River basins, Water flow.

For abstract, see STAR 1120

ORNL-TM-4185/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
INTAKE: A NUMERICAL PROGRAM TO CALCULATE FLUID VELOCITY PROFILES NEAR A RECTANGULAR INLET IN A STREAM WITH CROSS FLOW.
L. Dresner, V. R. Cain, and W. Jr. Davis. Jul 73, 75p
Contract W-7405-eng-26

Descriptors: (*Power plants; *Cooling), (*Computer codes, I codes), (*Plankton, *Intake), (*I codes, *Flow rate), Coolants, Water.

For abstract, see NSA 28 06, number 12878.

ORO-4254-10/GA PC$3.75/MF$1.45
Oklahoma State Univ., Stillwater.
SOURCES, SINKS, AND METHODS OF ANALYSIS OF ORGANIC NITROGEN COMPOUNDS IN FRESH WATER SYSTEMS.
J. A. Kelly. 1971, 31p

Descriptors: (*Organic nitrogen compounds, *Chemical analysis), Nitrogen, Organic compounds, Quantitative chemical analysis, Reviews, Water.

For abstract, see NSA 28 05, number 12576.

ORO-4254-8/GA PC$3.25/MF$1.45
Oklahoma State Univ., Stillwater.
THEORY AND APPLICATION OF CONTINUOUS MONITORING FOR CHEMICAL RESEARCH IN NATURAL WATER SYSTEMS.
G. K. Rice, and L. P. Varga. 26 Oct 72, 25p

Descriptors: (*Surface waters, *Monitoring), Automation, Pollution.

For abstract, see NSA 28 05, number 12575.

PB-223 870/7GA PC$3.75/MF$1.45
Illinois Univ., Urbana. Water Resources Center.
ANALYSIS OF MULTIPLE-INPUT STOCHASTIC HYDROLOGIC SYSTEMS.
Research rept., (Final),
Ven Te Chow. Jul 73, 76p WRC-RR-67, UILU-WRC-0067 W73-14753, OWRR-B-038-ILL(10)

Descriptors: (*Watersheds, Mathematical models), (*River basins, *Hydrology), Stochastic processes, Sangamon River basin, Illinois, Precipitation(Meteorology), Stream flow, Time series analysis, Computer programs.

The development of a multiple-input stochastic hydrologic system model is described for the analysis of hydrologic behavior of watersheds. Various components of the hydrologic system are expressed by time series, each containing a trend component, a periodic component and a stochastic residual component. For modeling the multiple-input system, a Markov-type mathematical formulation is proposed. For illustrative purposes, the model is applied to the analysis of monthly precipitations and streamflows of the upper Sangamon River basin in Illinois. The results indicate that the proposed model is feasible for the basin and thus can be used for filling missing streamflow data or generating stochastic streamflow sequences. (Author)

PB-223 907/7GA PC$3.50/MF$1.45
Arizona Univ., Tucson. Dept. of Hydrology and Water Resources.
EFFECTS OF DEVELOPMENT ON SALINITY AND LIMNOLOGY OF THE LOWER COLORADO RIVER.
Rept. for Jul 72-Jun 73,

D. D. Evans, S. Ince, C. C. Kisiel, H. K. Qashu, and L. G. Everett. Aug 73, 67p W73-14756, OWRR-A-036-ARIZ(3)
Contract DI-14-31-0001-3803

Descriptors: (*Colorado River, *Limnology), (*Water quality, Colorado River), Mathematical models, Salinity, Plankton, Trace elements, Reservoirs, Spectrum analysis, Water pollution, Biological productivity.
Identifiers: Eutrophication.

This research was designed to assemble and analyze available data on chemical quality and limnology of reservoirs and river reaches from Lee Ferry to Imperial Dam, to determine the effects of development on salinity and to initiate the validation of models of interaction of chemical ions, sediments, biological factors and other limnological inputs such as thermal stratification and turnover. The study has completed a biological and chemical review of the Lower Colorado River, a statistical and stochastic eutrophication model, an energy-budget model, a cross-spectral analysis salinity model and shown the applicability of remote sensing of water quality. A specific chemical-ion model and aquatic ecosystem model to incorporate the above sub-models is under development. (Author)

PB-223 928/3GA PC$11.00/MF$1.45
New Mexico Inst. of Mining and Technology, Socorro.
QUANTITATIVE HYDROLOGIC STUDY OF A CLOSED BASIN WITH A PLAYA (ESTANCIA VALLEY, NEW MEXICO).
Doctoral thesis,
Bruce E. DeBrine. May 71, 180p W73-14767, OWRR-B005-NMEX(2)

Descriptors: (*Hydrogeology, *Playas), (*Ground water, Playas), Darcys law, Semiarid land, Water balance, Estancia Valley, New Mexico, Evaporation, Geology, Hydrology, Aquifers, Climate, Computer programs, FORTRAN, Theses.

Few quantitative hydrologic studies of closed basins discharging ground water through playa systems have been made. A water budget was determined for a small test area of the Estancia Valley in central New Mexico which offers a unique, highly saline, perennially moist, environment in its playa discharge region. Ground water inflow was determined by Darcy's Law in the form: Q = TIL, using the results of several aquifer tests and water level data from a well monitoring program. Evaporative discharge was determined from climatic data, collected at a weather station located on a playa near the test area, utilizing several existing techniques. These techniques were modified and adapted to fit the unique conditions of the Estancia playas. Computer programs were developed to process the climatic data. The results show that between 340 and 455 acre-feet of ground water is discharged by evaporation in the test area each year. Extending these results to the entire Estancia system shows that between 27,000 and 36,000 acre-feet of ground water is discharged annually by the playas. (Author)

PB-223 964/8GA PC$3.75/MF$1.45
Minnesota Univ., Minneapolis. St. Anthony Falls Hydraulic Lab.
SIMULATION OF THE QUANTITY AND QUALITY OF FLOW IN A RIVER BASIN.
Project rept.,
Charles C. S. Song, Arthur F. Pabst, and C. Edward Bowers. Jun 73, 92p* 145 W73-14765, OWRR-A-024-Minn(1)

Descriptors: (*River basins, Mathematical models), (*Water quality, Mathematical models), (*Stream flow, Mathematical models), Minnesota River basin, Temperature, Surface water runoff, Stochastic processes, Computer programs.

The objective of this study was the simulation of the quantity and quality of flow in a fairly large basin on a continuous synthesis basis. To accomplish this objective, an existing mathematical model was modified slightly and fitted to the 16,200 square mile Minnesota River Basin. The model used was the SSARR (Streamflow Synthesis and Reservoir Regulation) model developed by the Corps of Engineers and the National Weather Service for the Columbia Basin. A stochastic water quality model was developed and fitted to portions of the Minnesota Basin for use with the quantity model. A deterministic water quality model was written for the main stem of the Minnesota River. Preliminary results using water temperature data show good agreement with measured data. Portions of this document are not fully legible.

PB-223 965/5GA PC$2.75/MF$1.45
Rhode Island Univ., Kingston. Dept. of Physics.
NEW FLUORESCENT TRACER DETECTION TECHNIQUES FOR USE IN POLLUTED ENVIRONMENT.
Final rept. 1 Jul 71-30 Jun 73,
J. A. Northby. 30 Jun 73, 8p OWRR-B-039-RI(1), W73-14770
Contract DI-14-31-0001-3643

Descriptors: (*Fluorescent dyes, *Water analysis), (*Water flow, Fluorescent dyes), Fluorometers, Water pollution, Tracer studies, Polarized electromagnetic radiation.
Identifiers: Rhodamine B.

Polarization properties are reported of the background fluorescence of natural water samples obtained from the Providence River and Narragansett Bay. These properties appear to be subject to the same spatial and temporal variability as the unpolarized background fluorescence. Consequently, it is unlikely that significant improvement in the sensitivity of detection of tracer dyes in polluted water can be achieved by using a dye whose polarization properties are complimentary to those of the background.

PB-224 014/1GA PC$7.25/MF$1.45
Toledo Univ., Ohio. Dept. of Geology.
WATER QUALITY AND MINERAL SOLUBILITIES IN SURFACE AND GROUND WATER; OAK OPENINGS COMMUNITY, LUCAS CO., OHIO.
Master's thesis,
Nicholas Valkenburg. Aug 73, 102p OWRR-C-3082-Ohio(1), W73-73-14863
Contract DI-14-31-0001-3682

Descriptors: (*Water quality, *Ohio), Water chemistry, Rural areas, Urbanization, Ground water, Surface waters, Hydrogeology, Sampling, Solubility, Minerals, Trace elements, Lead(Metal), Zinc, Cadmium, Aquifers, Theses.
Identifiers: Lucas County(Ohio), Oak Openings Community, Baseline measurements.

Oak Openings Community is a 4,587 acre County Renewal area situated on a surficial sand aquifer. Ground water samples were extracted from near the bottom of the aquifer through drive points at four sites. At five additional sites ground water samples were extracted through well screens installed across the water table. Surface water samples were collected from drainage ditches at eight sites. Samples were collected from these surface water and groundwater sites seven times between May 4, 1972, and March 9, 1973. Each sample was analyzed for calcium, magnesium, sodium, potassium, chloride, nitrate, bicarbonate, lead, zinc, cadmium, iron, specific conductance, pH, total dissolved solids, and hardness. All water was the calcium-bicarbonate type, and surface water was more highly mineralized than ground water. Mineral equilibria calculations using analyzed values of dissolved species suggest that both ground water and surface water are in near equilibrium with aquifer minerals except for sodium and chloride, which imply additional halite that is not known to be a natural aquifer mineral.

PB-224 015/8GA PC$9.50/MF$1.45
Alaska Univ., College. Inst. of Water Resources.
EFFECTS OF THERMAL DISCHARGES UPON THE CHENA RIVER.
Master's thesis,
W. C. Armstrong. Apr 73, 146p OWRR-B-020-Alaska(2), W73-14864

Descriptors: (*Water pollution, *Heat), (*Chena River, Water pollution), Ice, Alaska, Cooling water, Aquatic biology, Ice fog, Thermal diffusion, Electric power plants, Heat transfer, Sediments, Sampling, Temperature, Heat exchangers, Computer programs.
Identifiers: *Thermal pollution, Fairbanks(Alaska).

The evaluation of several thermal discharges in Fairbanks, Alaska was carried out to determine their effects on the physical parameters of the Chena River, a typical sub-Arctic stream. In addition, the effectiveness of two discharge schemes at the main thermal source was compared. The use of a surface-spreading scheme at either source would result in a heat dissipation rate per unit area 2 to 10 times greater than use of a submerged jet. The amount of ice cover downstream from the discharges would be approximately 40% more using the submerged jet. The advantages of each discharge method are discussed and two alternative cooling methods are suggested.

PB-224 058/8GA PC$7.75/MF$1.45
Minnesota Univ., Minneapolis. Water Resources Research Center.
NINTH ANNUAL REPORT, WATER RESOURCES RESEARCH CENTER.
Rept. for 1 Jul 72-30 Jun 73.
Aug 73, 112p W73-14872, OWRR-OWRR-A-999-MINN(29)
Contract DI-14-31-0001-3823

Descriptors: (*Water resources, *Minnesota), (*Research projects, Water resources), Technical reports, Summarizing, Watersheds, Aquatic plants, Ground water, Project planning, Soil water, Mississippi River, Financing, Water pollution, Irrigation, Floods, Forestry.
Identifiers: Eutrophication.

This is the Ninth in a series of annual reports covering the activities of the Water Resources Research Center, University of Minnesota. The report indicates the nature of the program conducted in the twelve months beginning July 1, 1972, and ending June 30, 1973, with funds provided by the Graduate School and the Office of Water Resources Research in connection with the Water Resources Research Act of 1964. The Center supported 18 research projects involving 19 faculty members. These research projects were concerned with: mathematical watershed system analysis, aquatic plants, eutrophic lakes, groundwater basin information, water resources research planning, soil water movement, Mississippi river ecology, perception of water resources problems, financing of water resources development, water pollution and social factors, forest management, water resources policies, sub-surface irrigation, flood forecasting, water policy decisions, precipitation variations, and floods.

PB-224 060/4GA PC$3.75/MF$1.45
Utah Center for Water Resources Research, Logan.
EUTROPHICATION OF SHELTERED BAYS IN A LARGE LAKE.
Final rept.,
William T. Helm. 1972, 83p W73-14875, OWRR-OWRR-B-056-UTAH(1)
Contract DI-14-31-0001-3343
Supersedes report dated 1971, PB-200 259.

Descriptors: (*Biological productivity, *Lakes), (*Bays(Topographical features), Biological productivity), (*Water quality, Bays(Topographical features)), Bear Lake, Utah, Idaho, Breakwaters, Coliform bacteria, Water

chemistry, Benthos, Aquatic animals, Aquatic plants, Sediments, Water flow.

Whether undesirable changes occur in bays, especially those formed by break-waters, was studied in Bear Lake, Utah-Idaho. The quantity of influent water was measured, the differences in quality in the bay from the lake determined, and a comparative study of any measurable biological responses possibly related to differences in water quality made. Measured water chemistry parameters did not differ from one location to another in Bear Lake. Sheltered areas, protected by bays or breakwaters, contained conditions more favorable for development of vegetation and populations of some chironomid species than areas exposed to full force of water currents. There is an apparent annual eutrophication cycle in sheltered bays.

PB-224 066/1GA PC$5.00/MF$1.45
Geological Survey, Boise, Idaho. Water Resources Div.
AN EVALUATION OF WATER-QUALITY DATA OBTAINED AT FOUR STREAMFLOW DAILY-RECORD STATIONS IN IDAHO.
Final rept. 1939-1971,
Kenneth L. Dyer. 20 Jun 73, 57p USGS-WRI-30-73, USGS/WRD-73-018

Descriptors: (*Water chemistry, *Idaho), Regression analysis, Snake River, Boise River, Bear River, Dams, Stream flow, Conductivity.

Four streamflow water quality stations in Idaho with historical records ranging from 7 to 22 years were analyzed statistically to show the functional relationships of the major inorganic chemical constituents to specific conductance and stream discharge. The data for each of the three long term stations were subdivided into approximately five-year segments; then plots and regression equations were derived for each record segment in order to assess changes in constituent relations with time. In general, highly significant correlations were observed between the major inorganic ions and specific conductance. Distinctly poorer, though still significant, correlations were usually observed between these same ions and discharge. (Modified author abstract)

PB-224 080/2GA PC$6.25/MF$1.45
Geological Survey, Menlo Park, Calif. Water Resources Div.
BOLINAS LAGOON, MARIN COUNTY, CALIFORNIA. SUMMARY OF SEDIMENTATION AND HYDROLOGY, 1967-69 WITH A SECTION ON FLUORESCENT-TRACER STUDY OF SEDIMENT MOVEMENT.
Water-resources investigations 1967-69 (Final),
John R. Ritter, and William M. Brown, III. Aug 73, 82p USGS/WRI-19-73, USGS-WRD-73-019
Prepared in cooperation with the Bolinas Harbor District and Marin County.

Descriptors: (*Lagoons(Laudforms), Sediment transport), (*Sediment transport, Marking), Ocean currents, Tidal currents, Fluid flow, Littoral drift, Topography, Beach erosion, Phosphorescent materials, Bolinas Lagoon, Sedimentation, Suspended sediments.
Identifiers: Marin County(California), Tracer studies.

Sedimentation in Bolinas Lagoon, a 1,100-acre lagoon 15 miles northwest of San Francisco, presently averages about 16 acre-feet per year, as determined from net sediment budget studies, topographic surveys, and geological evidence. Studies 1967-69 indicated that tidal flows transported about 80 acre-feet of sediment into and out of Bolinas Lagoon annually. Cliff and shore erosion, and littoral drift provided the sediment transported into the lagoon by floodtides; winds and streamflow brought in additional sediment. Most of the suspended sediment is sand; tidal flows reached average velocities of 4.9 feet per second and volumes of 2,800 acre-feet, and suspended sediment discharge was as much as 1,200 tons with rates as large as 11,600 tons per day on an ebbtide. Littoral drift near the inlet was generally toward the inlet. Circulation velocities in the lagoon probably remain high enough to erode bottom sediment along the channels. Bottom sediment in most of the lagoon is fine sand derived largely from Monterey Shale. (Modified author abstract)

PB-224 138/8GA PC$3.00/MF$1.45
Arizona State Univ., Tempe. Dept. of Chemical Engineering.
MODELING AND SIMULATION OF RESERVOIRS TO PREDICT EVAPORATION REDUCTION BY SURFACE FILMS.
Technical completion rept. Jul 72-Jun 73,
C. O. Reiser, and J. L. Adams. 1 Sep 73, 38p*
OWRR-A-041-ARIZ(1), W73-14868
Contract DI-14-31-0001-3803

Descriptors: (*Reservoirs, *Evaporation), (*Water loss, Evaporation), Computerized simulation, Energy transfer, Air water interactions, Monomolecular films, Lake Hefner, Arizona, Mathematical models.

A computer model was composed to estimate evaporation from a body of water and the value of a monomolecular film as an evaporation suppressant. An energy budget, the Crank-Nicolson numerical method, and Lake Hefner, Arizona, meterorological data were used in the model. These features were organized into a simulation which estimates evaporation and calculates a temperature profile based on a trial and error solution to the heat equation. The model was written in the Fortran V computer language as operating on the UNIVAC 1110 computer system.

USGS-474-103/GA PC$4.00/MF$1.45
Geological Survey, Lakewood, Colo. (Usa).
HYDRAULIC TESTS IN HOLE UAE-2, AMCHITKA ISLAND, ALASKA.
W. C. Ballance. Jun 73, 38p
Contract AT(29-2)-474

Descriptors: (*Amchitka island area, *Hydrology), Boreholes, Fluid flow, Nuclear explosions, Testing, Underground explosions.

For abstract, see NSA 28 06, number 12879.

USGS-474-142/GA PC$4.00/MF$1.45
Geological Survey, Lakewood, Colo. (Usa).
HYDRAULIC TESTING AND SAMPLING OF WATER WELL NUMBER 2, PROJECT WAGON WHEEL, SUBLETTE COUNTY, WYOMING. WAGON WHEEL-2.
G. A. Dinwiddie. Apr 73, 36p PNE-WW-27
Contract AT(29-2)-474

Descriptors: (*Wagon wheel event, *Hydrology), (*Ground water, *Qualitative chemical analysis), Sampling, Testing.

For abstract, see NSA 28 05, number 10840.

8I. Mining Engineering

LA-5207-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
HEAT LOSS CALCULATIONS FOR SMALL DIAMETER SUBTERRENE PENETRATORS.
D. J. Murphy, and R. G. Gido. Feb 73, 15p
Contract W-7405-eng-36

Descriptors: (*Subterrene penetrators, *Performance), (*Rock drilling, *Heat transfer), Analytical solution, Computer codes, Configuration, Melting, Operation, Rocks, Soils, Temperature dependence, Thermal conductivity.

For abstract, see NSA 28 05, number 10794.

LA-5210-MS/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
LARGE SUBTERRENE ROCK-MELTING TUNNEL EXCAVATION SYSTEMS. A PRELIMINARY STUDY.
R. J. Hanold. Feb 73, 35p
Contract W-7405-eng-36

Descriptors: (*Subterrene penetrators, *Design), (*Tunnels, *Excavation), Boreholes, Cost, Heat pipes, Melting, Operation, Performance, Reactors, Rock drilling, Rocks, Soils.

For abstract, see NSA 28 05, number 10795.

PATENT-3 704 966/GA Not available NTIS
Department of the Navy Washington D C
METHOD AND APPARATUS FOR ROCK EXCAVATION.
Patent,
Earl J. Back, Jr. Filed 13 Sep 71, patented 5 Dec 72, 5p Rept nos. PAT-APPL-179 736,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Liquid jets, *Patents), (*Rock(Geology), Removal), Vibration, Excitation, Spallation, Ocean bottom.
Identifiers: PAT-CL-417-490, *Rock excavation.

The patent relates to an apparatus and method for producing a slug of water to be delivered at high impact velocity against a surface to be eroded. It includes a cylinder containing a reciprocable ram having a shaped end. Introduction of fluid tangentially into the cylinder forms a stable annulus of fluid and reciprocation of the ram rapidly expels the fluid as a jet our an end opening of the cylinder into contact with the work to be eroded.

PB-223 746/9GA PC-GPO/MF$1.45-NTIS
Bureau of Mines, Washington, D.C.
TECHNOLOGIC TRENDS IN THE MINERALS INDUSTRY, 1971.
Information circular.
Aug 73, 67p BuMines-IC-8581
Paper copy available from GPO $0.90 as stock no. 2404-01328, Catalog no. I28.27:8581.

Descriptors: (*Mining, Trends), Industries, Beneficiation, Mining engineering, Mining equipment, Mining research, Electrometallurgy, Hydrometallurgy, Pyrometallurgy, Statistical data.

The report summarizes information on latest technological development and advances, and identifies trends in mining and metallurgy based on a review of activities in the minerals industry in 1971. Exploration and mining data obtained from an annual canvass are presented for 1971 as well as comparisons of similar data over the past decade. (Author)

PB-224 256/8GA PC$5.50/MF$1.45
Bendix Research Labs., Southfield, Mich.
FEASIBILITY OF REMOTE CONTROL AND DEVELOPMENT OF REMOTE CONTROL DEVICES AND SENSORS. 1. SHUTTLE CAR SENSOR SYSTEM. INTRODUCTION AND TEXT.
Final rept. Jun 71-Feb 73,
Richard L. Fowler, Gary I. Robin, and William C. Troll. Mar 73, 68p BuMines-OFR-62(1)-73
Contract H-111194
Paper copy also available from NTIS $44.00/set of 8 reports as PB-224 255-SET.

Descriptors: (*Coal mining, *Remote control), (*Mine cars, *Optical radar), Control equipment, Detection, Mine haulage, Detectors, Infrared lasers, Barriers, Guidance, Display devices, Feasibility.

Study and development of sensing techniques and sensors were performed to aid shuttle car drivers in detecting obstacles and in guiding a car along a face haulage route. Microwave, acoustic, and optical sensing techniques were considered as part of the feasibility study for obstacle detection. Various guidance techniques, including wire-following and rib-ranging were investigated. Active optical sensing was selected for obstacle detection to obtain the beam coverage and sharp angular cutoff characteristics required within the packaging limitations defined by the shuttle car configuration. Rib-ranging guidance was selected to achieve a completely self-contained shuttle car system that responds to the existing mine geometry without need for wires, stripes, or other path defining devices. The obstacle detection and guidance system was designed, fabricated and installed on a standard shuttle car, satisfying all permissibility requirements. All sensors successfully demonstrated the predicted performance capability during underground face haulage tests.

PB-224 257/6GA PC$11.25/MF$1.45
Bendix Research Labs., Southfield, Mich.
FEASIBILITY OF REMOTE CONTROL AND DEVELOPMENT OF REMOTE CONTROL DEVICES AND SENSORS. 2. SHUTTLE CAR SENSOR SYSTEMS. APPENDIX A. TECHNICAL DESCRIPTION.
Final rept. Jun 71-Feb 73,
Richard L. Fowler, Gary I. Robin, and William C. Troll. Mar 73, 181p BuMines-OFR-62(2)-73
Contract H0111194
Paper copy also available from NTIS $44.00/set of 8 reports as PB-224 255-SET.

Descriptors: (*Coal mining, *Remote control), (*Mine cars, *Optical radar), Control equipment, Detection, Mine haulage, Detectors, Infrared lasers, Barriers, Guidance, Display devices.

Study and development of sensing techniques and sensors were performed to aid shuttle car drivers in detecting obstacles and in guiding a car along a face haulage route. Microwave, acoustic, and optical sensing techniques were considered as part of the feasibility study for obstacle detection. Appendix A covers lateral guidance subsystem sensors, obstacle detector sensors, and processing, displays, and controls.

PB-224 258/4GA PC$5.75/MF$1.45
Bendix Research Labs., Southfield, Mich.
FEASIBILITY OF REMOTE CONTROL AND DEVELOPMENT OF REMOTE CONTROL DEVICES AND SENSORS. 3. SHUTTLE CAR SENSOR SYSTEM. APPENDIX B. SYSTEM TESTS.
Final rept. Jun 71-Feb 73,
Richard L. Fowler, Gary I. Robin, and William C. Troll. Mar 73, 73p BuMines-OFR-62(3)-73
Contract H0111194
Paper copy also available from NTIS $44.00/set of 8 reports as PB-224 255-SET.

Descriptors: (*Coal mining, *Remote control), (*Mine cars, *Optical radar), Control equipment, Detection, Mine haulage, Detectors, Infrared lasers, Barriers, Feasibility, Guidance, Display devices.

Study and development of sensing techniques and sensors were performed to aid shuttle car drivers in detecting obstacles and in guiding a car along a face haulage route. Microwave, acoustic, and optical sensing techniques were considered as part of the feasibility study for obstacle detection. Appendix B covers above ground tests and field demonstration.

PB-224 259/2GA PC$7.50/MF$1.45
Bendix Research Labs., Southfield, Mich.
FEASIBILITY OF REMOTE CONTROL AND DEVELOPMENT OF REMOTE CONTROL DEVICES AND SENSORS. 4. CONTINUOUS MINING MACHINE SEAM INTERFACE SENSORS.
Final rept., Jun 71-May 72,
Ronald F. Steinberg, John T. Ioannou, and Sarkis Barkhoudarian. Aug 72, 106p BuMines-OFR-62(4)-73
Contract H0111194
Paper copy also available from NTIS $44.00/set of 8 reports as PB-224 255-SET.

Descriptors: (*Coal mining, *Remote control), (*Mining equipment, Control equipment), (*Acoustic detection, Coal deposits), Interfaces, Detectors, Detection, Gamma rays, Dimensional measurement, Thickness.

The report presents the results of the study and experimentation on coal-seam interface sensing using the acoustic pulse-echo technique. This method was chosen for further development subsequent to initial feasibility studies investigating other acoustic, electrical, magnetic, nucleonic, and mechanical techniques. The design and construction of acoustic transducers and coupling techniques are discussed and the electronic equipment used in conjunction with the transducers is described. Laboratory coal simulation experiments are described and the results of acoustic transmission and reflection laboratory experiments, using coal samples from various sources, are presented. It was found that the propagation of acoustic energy varied widely in different coal samples. An underground field test was performed for the purpose of evaluating the effectiveness of the technique for measuring coal thickness in situ prior to final hardware design and construction. The results of the field test, which showed that detection of the coal seam interface was difficult using state-of-the-art techniques because of competing signal returns, are discussed.

PB-224 260/0GA PC$3.25/MF$1.45
Bendix Research Labs., Southfield, Mich.
FEASIBILITY OF REMOTE CONTROL AND DEVELOPMENT OF REMOTE CONTROL DEVICES AND SENSORS. 5. CONTINUOUS MINING MACHINE LASER ENTRY ALIGNMENT SENSOR.
Final rept. Jun 71-Nov 72,
William R. Wyess, Clive E. Catchpole, and Ronald F. Steinberg. Feb 73, 24p BuMines-OFR-62(5)-73
Contract H0111194
Paper copy also available from NTIS $44.00/set of 8 reports as PB-224 255-SET.

Descriptors: (*Coal mining, *Remote control), (*Mining equipment, Control equipment), Alignment, Lasers, Detectors.

The report describes the development of a laser entry alignment sensor for guiding a continuous mining machine. The history of the design from one using two four-quadrant photodetectors with a servo system to one with an array of optical lens elements and sensors is detailed. Principal design features and the design philosophy are also discussed. The components of the final package (slave laser, master transit, sensor unit, display unit) are described in detail. The results of performance tests on the accuracy of the heading and tracking indications are also presented. Finally, recommendations are made for future work.

PB-224 261/8GA PC$8.75/MF$1.45
Bendix Research Labs., Southfield, Mich.
FEASIBILITY OF REMOTE CONTROL AND DEVELOPMENT OF REMOTE CONTROL DEVICES AND SENSORS. 6. FEASIBILITY STUDY OF THE APPLICATION OF SOLID STATE DISPLAYS FOR UNDERGROUND MINING MACHINES.
Final rept.
8 Aug 72, 133p BuMines-OFR-62(6)-73
Contract H0111194
Prepared by Bendix Corporation, Denver, Colo.
Paper copy also available from NTIS $44.00/set of 8 reports as PB-224 255-SET.

Descriptors: (*Coal mining, *Remote control), (*Mining equipment, Control equipment), (*Display devices, Mining equipment), Solid state devices, Liquid crystals, Plasma devices, Electroluminescent panels, Semiconductor diodes, Feasibility.
Identifiers: Light emitting diodes.

The report discusses an investigation of the application of solid state devices to information displays on underground coal mining machines. The specific purpose of the feasibility study was to consider solid state devices as replacements for conventional electrical or electromechanical devices, to increase the reliability of the machinery, to increase safety in the explosive mine atmosphere, to decrease maintenance requirements, and to increase adaptability of the machinery to automatic and remote control techniques. Solid state displays meet the functional, operational, and environmental requirements for use on underground mine equipment, the report states. It is recommended that the light emitting diode (OED) be used as the basic solid state device for display design. Replacement of conventional displays with solid state displays is technically feasible, but because of the very limited usage and simplicity of the conventional displays now in use on underground coal mining equipment, the practicality of replacing them with solid state displays is doubtful.

PB-224 262/6GA PC$6.00/MF$1.45
Bendix Research Labs., Southfield, Mich.
FEASIBILITY OF REMOTE CONTROL AND DEVELOPMENT OF REMOTE CONTROL DEVICES AND SENSORS. 7. FEASIBILITY STUDY OF THE APPLICATION OF SOLID STATE MOTOR CONTROLLERS TO UNDERGROUND MINING MACHINES.
Final rept.
Oct 72, 76p BuMines-OFR-62(7)-73
Contract H0111194
Paper copy also available from NTIS $44.00/set of 8 reports as PB-224 255-SET.

Descriptors: (*Coal mining, *Remote control), (*Mining equipment, Control equipment), (*Controllers, Solid state devices), Electric motors, Silicon controlled rectifiers, Feasibility.

The work was directed toward a general study of solid state control devices available, their potential use on electrical machinery used in underground mines, and the general effect that the use of solid state devices might have on safe operation of machines. The underground mine environment presents rather severe physical and electrical stresses to machinery. Silicon controlled rectifiers that meet the mine equipment requirements are available. While SCR initial costs appear to be higher than costs for electromechanical contactors, savings should result from reduced maintenance requirements, safer operation, higher reliability, elimination of mechanical transmissions, elimination of rectifier centers, and standardization on AC power, the report states.

PB-224 263/4GA PC$5.00/MF$1.45
Bendix Research Labs., Southfield, Mich.
FEASIBILITY OF REMOTE CONTROL AND DEVELOPMENT OF REMOTE CONTROL DEVICES AND SENSORS. 8. FEASIBILITY STUDY OF REMOTE/AUTOMATIC CONTROLS FOR CONTINUOUS MINERS.
Final rept.
Oct 72, 59p BuMines-OFR-62(8)-73
Contract H0111194
Paper copy also available from NTIS $44.00/set of 8 reports as PB-224 255-SET.

Descriptors: (*Coal mining, *Remote control), (*Mining equipment, Control equipment), Automatic control equipment.

The objective of the study was to investigate the feasibility of using remote and/or automatic controls for operation of a drum-type continuous min-

ing machine. Based upon the study, it was concluded that on-site automatic or semiautomatic controls is not feasible for this type of machine since it requires man to be in a high accident zone (within 25 feet of the face). In addition, such control modes are economically unattractive yielding only marginal gains in production efficiency. On-site control for the continuous miner operations that are associated with shuttle car docking and loading is ruled out for the same reasons. A key conclusion of the study identified visual information as being essential for the mining and dock/load functions. Two system concepts are possible: Direct line-of-sight feedback to an operator in an enclosed remote control station near the face, or a closed circuit television system with cameras mounted on the continuous miner with the operator located in a distant remote control station. The latter system was selected for operator safety.

8J. Physical Oceanography

AD-767 682/8GA PC$6.50/MF$1.45
Naval Postgraduate School Monterey Calif
AN ANALYSIS OF DATA OBTAINED FROM VANE SHEAR TESTS OF RECENT MARINE SEDIMENT.
Master's thesis,
George Edmund Voelker. Jun 73, 87p

Descriptors: (*Marine geology, *Soil mechanics), (*Ocean bottom, Soil mechanics), Test equipment, Density, Moisture, Particle size, Sand, Silt, Clay, Theses, Pacific Ocean, California.
Identifiers: *Shear tests, *Sediments, Monterey Submarine Fan.

An analysis has been conducted of laboratory vane shear torque vs. rotation curves for 48 marine sediment samples from the Monterey Submarine Fan, made at the Naval Postgraduate School, and for 9 samples from the San Diego Trough, provided by other investigators. Particular emphasis was given to the first 20 degrees of rotation, since this corresponds to the elastic portion of the curve. By conducting the tests to rotations of 180 degrees, remolded strength of the sediment was determined. Values of maximum shear strength, remolded strength, sensitivity, and initial slope of the curve are plotted as functions of various mass physical and textural properties. Values of initial slope are also compared with values of dynamic shear moduli. The results indicate that in-situ tests are preferable for obtaining relationships between strength parameters and other properties. Suggestions have been made for improving the reliability and reproducibility of the laboratory tests. (Author)

AD-767 721/4GA PC$3.75/MF$1.45
Rockwell International Corp Downey Calif Space Div
COASTAL BATHYMETRIC PLOTTING.
Final summary rept. 22 Feb-28 Sep 73,
David T. Hodder. 28 Sep 73, 77p Rept no. SD-73-SA-0131
Contract N00014-72-C-0149

Descriptors: (*Ocean bottom topography, *Depth finding), (*Seacoast, Aerial photography), Sedimentation, Ocean currents, Tracer studies, Multiband spectral reconnaissance.
Identifiers: *Bathymetry, *Remote sensing, ERTS-1 satellite, Suspended sediments, Sediment transport, Coasts.

The report summarizes the most recent research into the spatial temporal image merging technique for remote sensing of bathymetry in turbid coastal waters. Prior research had proved the method under average to optimum turbid water seeing conditions. This report discusses the degradation of the method under more severe environmental conditions and evaluates auxiliary methods for its improvement under difficult conditions. Factors such as sea state bottom reflectance variation and differing sediment loads are considered. Auxiliary methods for remote calibration include thermal IR scanning for surface current mapping, electronic removal of solar glitter patterns and spectral brightness variations in the sea, together with multiple color dye releases at their characteristic optical extinction depths to infer vertical current and hence sediment distribution. A final task is the preliminary evaluation of this bathymetry plotting method from ERTS-1 space imagery in a number of non-California, turbid coastal water types. (Modified author abstract)

AD-767 729/7GA PC$3.75/MF$1.45
Oregon State Univ Corvallis School of Oceanography
OBSERVATIONS OF LIGHT SCATTERING AND SUSPENDED PARTICULATE MATTER OFF THE OREGON COAST JUNE-OCTOBER 1972.
Data rept.,
William S. Plank, and Hasong Pak. Jun 73, 78p
Rept nos. Data-55, Ref-73-11
Contract N00014-67-A-0369-0007

Descriptors: (*Pacific Ocean, Light transmission), (*Sea water, Particle size), Oceanographic data, Statistical distributions, Tables, Oregon.
Identifiers: *Suspended sediments, Light scattering, Particle size distribution, Upwelling.

The results of light scattering measurements made with a Brice-Phoenix photometer and particle size distribution measurements made with a Model A Coulter Counter are presented. The data were collected on five cruises off the Oregon Coast during the period June - October 1972. The cruises were a part of the Coastal Upwelling Experiment (CUE). (Author)

AD-767 806/3GA Reprint
Lamont-Doherty Geological Observatory Palisades N Y
OBSERVATIONS OF SHALLOW LAYERING UTILIZING THE PINGERPROBE ECHO-SOUNDING SYSTEM.
Journal article,
Maurice Ewing, R. W. Embley, and Thomas H. Shipley. 14 May 73, 10p Rept no. LDGO-1938
Contract N00014-67-A-0108-0004
Availability: Pub. in the Marine Geology, v14 pM55-M63 1973.

Descriptors: (*Ocean bottom, *Echo ranging), Terrain, Topographic cameras, Collecting methods, Oceanographic equipment.
Identifiers: Submarine plains.

A 'Pingerprobe' is a system of echo sounding in which the sound source is placed near bottom to improve resolution by restricting the area investigated. It is demonstrated that a commercially available 12-kHz 'pinger' with a synchronized shipboard receiver is useful not only in the monitoring of the positioning of a bottom or near-bottom instrument package (such as a corer) but also in making observations on the acoustic nature of the sea floor. In rough terrain the Pingerprobe has measured stratified sediments in some places where the PDR (Precision Depth Recorder) cannot. Observations on proximal abyssal plains indicate that the prolonged echo character common to these areas may result from small-scale roughness or inhomogeneity. When a suspended instrument is sent to the bottom in rough terrain, or in areas of intermittent subbottom reflections, use of a Pingerprobe improves information about the conditions at the point of contact and permits selection of the desired topographic setting. (Author)

AD-767 808/9GA Reprint
Lamont-Doherty Geological Observatory Palisades N Y
GEOLOGY OF THE OCEANIC CRUST: MAGNETIC PROPERTIES OF OCEANIC ROCKS.
Journal article,
Paul J. Fox, and Neil D. Opdyke. 30 Jan 73, 18p
Rept no. LDGO-1973
Contract N00014-67-A-0108-0004
Revision of report dated 26 Jan 73.
Availability: Pub. in the Jnl. of Geophysical Research, v78 n23 p5139-5154, 10 Aug 73.

Descriptors: (*Ocean bottom, Magnetic properties), Basalt, Atlantic Ocean, Caribbean Sea, Ocean bottom sampling, Terrestrial magnetism.
Identifiers: Gabbro, Peridotite, Weathering, North Atlantic Ocean.

A diverse suite of rocks has been sampled from ocean basin escarpments in the North Atlantic and the Caribbean: fresh and weathered basalts, metabasalts (zeolite and greenschist facies), gabbros, metagabbros (greenschist and amphiolite facies), serpentinized peridotites, and actinolite rocks. One hundred and three representative specimens were chosen from this diverse suite of rocks, and the natural remanent magnetization (NRM) intensity and susceptibility for each specimen were measured in the laboratory. (Modified author abstract)

AD-767 815/4GA PC$2.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
ISOTOPIC ANALYSIS OF THE DEEP STAIRCASE STRUCTURE IN THE TYRRHENIAN SEA.
Memo.,
Robert Molcard, Gianni Cortecci, and Pietro Noto. 1 Oct 73, 13p Rept no. SACLANTCEN-SM-24

Descriptors: (*Sea water, Isotope availability), Mediterranean Sea, Oxygen, Tritium, Salinity, Temperature, Italy.
Identifiers: *Tyrrhenian Sea.

An isotopic analysis (O18 and Tritium) was performed on water samples taken in the Tyrrhenian Sea where the 'staircase' type of structure occurs. Comparison between temperature-salinity characteristics and isotope concentration is reported. The observed decrease with depth of tritium concentration may indicate that the layers were formed at the same time, within the accuracy of the observations. The O18/O16 ratio and the delta O18 (SO4(--)) ratio showed insufficient change to characterise the layers. (Author)

AD-767 886/5GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
LATITUDINAL VARIATION AND SEASONAL VARIATIONS IN THE TOTAL CONTENT OF ATMOSPHERIC OZONE IN THE INDIAN OCEAN,
G. K. Gushchin. 6 Sep 73, 15p Rept no. FTD-HT-23-778-73
Edited trans. of Glavnaya Geofizicheskaya Observatoriya, Leningrad. Trudy (USSR) n279 p85-93 1972, by Louise E. Heenan.

Descriptors: (*Ozone, *Indian Ocean), Sea water, Oceanographic data, USSR.
Identifiers: Translations, Seasonal variations.

The report contains analysis of observations for total ozone content which were conducted in the Indian Ocean on the A.I. Voyeykov, and the Yu. M. Shokal'skiy (1961-1970), on the scientific research ship Akademik Korolev (1968-1969), and on the diesel-powered ship Ob' (1966).

AD-767 911/1GA Reprint
Oregon State Univ Corvallis School of Oceanography
OXYGEN-CARBON DIOXIDE-NUTRIENTS RELATIONSHIPS IN THE SOUTHEASTERN REGION OF THE BERING SEA,
S. Alvarez-Borrego, L. I. Gordon, L. B. Jones, P. Kilho Park, and Ricardo M. Pytkowicz. 12 Feb 72, 24p Rept no. Ref 72-19
Contract N00014-67-A-0369, Grant NSF-GA-1281

Supported in parts by Grants NSF-GA-12113, NSF-GA117011, NSF-GX-28167.
Availability: Pub. in the Nl. of the Oceanographical Society of Japan, v28 n2 p33-93 Apr 72.

Descriptors: (*Bering Sea, Chemical analysis), Salinity, Temperature, Oxygen, Phosphates, Nitrates, Silicates, PH, Sea water, Density, Distribution functions, Calcite, Aragonite, Carbon dioxide, Pacific Ocean.
Identifiers: Dissolved gases, Dissolved organic matter, Alkalinity, Chlorinity, North Pacific Ocean.

The vertical distribution of density, salinity, temperature, dissolved oxygen, apparent oxygen utilization, nutrients, preformed phosphate, pH; alkalinity, alkalinity: chlorinity ratio, 'in situ' partial pressure of carbon dioxide, and percent saturation of calcite and aragonite, for the Southeastern Bering Sea, is studied and explained in terms of biological and physical processes. Some hydrological interactions between the Bering Sea and the North Pacific Ocean are explained. (Modified author abstract)

AD-767 912/9GA Reprint
Oregon State Univ Corvallis School of Oceanography
SOME ASPECTS OF THE AXIALLY SYMMETRIC SUBMARINE DAYLIGHT FIELD,
J. R. V. Zaneveld, and H. Pak. 24 Feb 72, 5p Rept no. Ref 72-20
Contract N00014-67-A-0369-0007
Revision of report dated 11 Jun 71.
Availability: Pub. in Jnl. of Geophysical Research, v77 n15 p2677-2680 May 72.

Descriptors: (*Underwater light, Scattering), Sea water, Optical properties, Light transmission.

A set of differential equations is derived to relate the light field and its derivative to the inherent optical properties of sea water (volume-scattering function and beam-attenuation coefficient) when the light field is axially symmetric. From these equations, the volume-scattering function and the beam-attenuation coefficient can be calculated if the light field and its derivative with depth are known. The equations are then used to provide an alternate proof for the asymptotic light field hypothesis. The shape of the asymptotic light field is derived as a function of the inherent optical properties and the asymptotic decay constant. It is finally shown that if the shape of the asymptotic light field and the asymptotic decay constant are known, the inherent optical properties can be calculated. (Author)

AD-767 915/2GA Reprint
Oregon State Univ Corvallis School of Oceanography
LIGHT SCATTERING AND SUSPENDED MATTER IN NEPHELOID LAYERS,
William S. Plank, Hasong Pak, and J. Ronald V. Zaneveld. 6 Dec 71, 7p Rept no. Ref 72-18
Contract N00014-67-A-0369-0007
Availability: Pub. in Jnl. of Geophysical Research, v77 n9 p1689-1694 Mar 72.

Descriptors: (*Sea water, Particle size), Ocean bottom, Statistical distributions, Light transmission.
Identifiers: *Suspended sediments, Light scattering, Nephelometers.

During 1969 and 1970 measurements of light scattering and particle size distributions were made at 46 stations in the North Pacific, the eastern equatorial Pacific, and the North Atlantic. Light scattering was measured in vitro with a Brice-Phoenix light scattering Photometer and in situ with a nephelometer developed at Oregon State University. The size distribution of suspended particles with diameters greater than 2.22 micrometers was measured with a Coulter counter. Nepheloid layers with thicknesses of up to 930 meters were observed at 38 of the 46 stations. Except for greater total concentrations, particle size distributions of material obtained from within the layers were indistinguishable from those obtained from the clearer water above. Statistical analysis shows positive correlation between light scattering and particle concentration. (Author)

AD-768 061/4GA PC$2.75/MF$1.45
Institute for Acoustical Research Miami Fla
TIME VARYING SOUND PROPAGATION MODELS.
Final rept. 1 May 71-31 Jan 73,
John C. Steinberg. 24 Sep 73, 11p Rept no. IAR-73003
Contract N00014-67-A-0201-0015

Descriptors: (*Underwater sound, *Florida Strait), Sound transmission, Reviews.

The final report covers work on time-varying ray propagation models of sound transmission in the Straits of Florida. The report is supplementary to a final report of 1 June 1973, Transmission Fluctuations, IAR 73001, AD - 763421, which covers 12 years of work on phase-stable propagation and includes 8 publications on the principal results obtained. Time-varying ray propagation is modeled with relatively simple channels having plane parallel boundaries and the mean depths of the sound paths. When time-varying sound speed profiles derived from measured temperature-depth profiles were used in the models, calculated variations with time of the amplituded and phase of transmitted waves corresponded well with observations. The results indicate that medium-related changes in propagation can be modeled successfully with simple acoustic-environmental models. (Author)

AD-768 071/3GA Reprint
Oregon State Univ Corvallis School of Oceanography
COMPILATION OF REPRINTS,
W. S. Plank, S. Alvarez-Borrego, J. R. V. Zaneveld, A. Huyer, and P. K. Park. Jan 73, 61p Rept nos. Ref-72-18, Ref-72-19
Contract N00014-67-A-0369-0007
Also includes rept nos. Ref-72-20 thru Ref-72-23.
Availability: Pub. in Jnl. of Geophysical Research, v77 n9 p1689-1694; 20 Mar 72; v77 n15 p2677-2680, 20 May 72; v78 n18 p3215-3220, 20 Jun 72, Jnl. of the Oceanographical Society of Japan, v27 n4 p142-151 Aug 72; v28 n2 p72-93 Apr 73, and Jnl. of Physical Oceanography, v2 n3 p286-293 Jul 72.

Descriptors: (*Oceanographic data, Reports), Sea water, Light transmission, Underwater light, Pacific Ocean, Chemical analysis, Bering Sea, Wind, Ocean currents, Continental shelves.
Identifiers: Suspended sediments, North Pacific Ocean, Dissolved gases, Dissolved organic matter.

Contents:
- Li
  - ght scattering and suspended matter in nepheloid layers;
  - Oxygen-carbon dioxide-nutrients relationships in the southeastern region of the Bering Sea;
  - Some aspects of the axially symmetric submarine daylight field;
  - A comparison between wind and current observations over the continental shelf off Oregon, summer 1969;
  - AOU as indicator of water-flow direction in the Central North Pacific;
  - Surface currents off Oregon as determined from drift bottle returns.

AD-768 230/5GA Reprint
Rosenstiel School of Marine and Atmospheric Science Miami Fla
IRRADIANCE REFLECTIVITY OF A FLAT OCEAN AS A FUNCTION OF ITS OPTICAL PROPERTIES,
Howard R. Gordon, and Otis B. Brown. 12 Dec 72, 3p Rept no. Contrib-1634
Contract N00014-67-A-0201-0013
Availability: Pub. in Applied Optics, v12 n7 p1549-1551 Jul 73.

Descriptors: (*Oceans, Reflectivity), Optical properties, Colors, Spectrum signatures, Aerial reconnaissance.
Identifiers: Remote sensing, Radiative transfer, Ocean surface, Upwelling.

The radiative transfer equation has been solved by a Monte Carlo technique for a flat homogeneous ocean with two different incident radiance distribuitons. The irradiance reflectivity R for photons that penetrate the ocean is presented as a function of the single scattering albedo omega (O), and the scattering phase function P(theta) of the medium. The P(theta) used are based on experimental observations. The results clearly show that R depends strongly on both omega(O) and P(theta) but apparently not on the form of the incident radiance distribution. Arguments are presented to show that in clearest ocean water the upwelling field above the surface can provide information only about the upper 25 m of the medium. (Author)

AD-768 280/0GA PC$3.75/MF$1.45
Naval Civil Engineering Lab Port Hueneme Calif
ENGINEERING PROPERTIES OF SOME NORTH PACIFIC AND BERING SEA SOILS.
Technical note Aug 71-Dec 72,
H. J. Lee. Aug 73, 31p Rept no. NCEL-TN-1283

Descriptors: (*Ocean bottom, *Soil mechanics), (*Bering Sea, Ocean bottom sampling), (*Pacific Ocean, Ocean bottom sampling), Compressive properties, Shear stresses.
Identifiers: North Pacific Ocean, Moisture content.

During Leg 19 of the Deep Sea Drilling Project, the DV GLOMAR CHALLENGER obtained seafloor soil samples from the Bering Sea and North Pacific Ocean. These were tested for engineering properties including vane shear strength and compressibility. The results were analyzed and corrected for the significant disturbance introduced during sampling. Since the correction procedures used are based on a number of assumptions, the corrected results are approximately within perhaps 50 percent of the correct properties. These estimated engineering properties appear to follow the same trend as land soils and can be correlated with index properties obtained from totally remolded samples. This report represents one phase of a project to investigate seafloor soils on a worldwide basis. Eventually a final report summarizing all of the individual phase will be prepared. (Author)

COM-73-11504/0GA Reprint
Oregon State Univ., Corvallis. School of Oceanography.
COMPUTER MODELS OF DELTA GROTH DUE TO SEDIMENT INPUT FROM RIVERS AND LONGSHORE TRANSPORT,
Paul D. Komar. 11 Jan 73, 11p NOAA-73082810
Contract NOAA-2-35187
Revision of report dated 12 Oct 72.
Pub. in Bull. Geological Society of America, v84 p2217-2226 Jul 73.

Descriptors: (*Deltas, *Sediment transport), Ocean waves, Shores, Beaches, Rivers, Computerized simulation.
Identifiers: Shorelines, Sea Grant program.

Computer-simulation models are developed to investigate the growth and equilibrium shape of a river delta in which wave action is the dominant force in redistributing sands deposited at the river mouth. Common values of sediment supply by

rivers are used, and known relations for sand transport along beaches are applied. Although of a preliniary nature, the models appear to yield resonable comparisons with real beaches and delta shapes. (Modified author abstract)

COM-73-11546/1GA PC$3.00/MF$1.45
Texas A and M Univ., College Station.
COMPARISON OF GEOLOGICAL AND ENGINEERING PARAMETERS OF MARINE SEDIMENTS,
Arnold H. Bouma, William E. Sweet, Jr., Wayne A. Dunlap, and William R. Bryant. 1972, 15p
NOAA-73061901
Contract N00014-68-A-0308-0002, Grant NSF-GA-1296
Pub. in Proceedings of Annual Offshore Technology Conference (4th) Houston, Tex., 1-3 May 72. OTC paper no. 1514.

Descriptors: (*Sediments, *Ocean bottom), Triaxial tests, Shear tests, Compression tests, Electric resistance, Mexico Gulf.
Identifiers: Ocean bottom sampling, Sea Grant program.

Three-inch diameter piston cores collected from the Gulf of Mexico undergo a large number of geological and soil engineering tests in order to determine relationships between various physical parameters. Electrical resistivity logs are run to determine zones of interest. Cone penetrometer and vane shear measurements are being made on these zones and samples collected for water content, density, grain size, plasticity and carbonate content analyses. Additional samples are collected for absolute resistivity calibration, pore water properties, consolidation and triaxial (CU) tests. Lithological, structural and textural characteristics are also examined. The vane shear and cone penetrometer readings are correlated with triaxial tests. Comparison of all above mentioned parameters and other parameters derived from those measured indicates interesting relationships and clearly reveals that many of the fast tests adequately describe the general characteristics of the material, as long as a number of the time-consuming experiments, such as triaxial testing, are conducted for calibration purposes. Horizontal correlation can be done with shallow penetration high resolution subbottom profiling while in situ electrical resistivity logging can replace detailed coring that is normally required for determining sedimentary characteristics. (Modified author abstract)

COM-73-11552/9GA Reprint
Rhode Island Univ., Kingston. Graduate School of Oceanography.
SEDIMENTS IN THE ATLANTIC CORNER SEAMOUNTS: CONTROL BY TOPOGRAPHY, PALEO-WINDS, AND GEOCHEMICALLY-DETECTED MODERN BOTTOM CURRENTS,
Bonnie A. McGregor, Peter R. Betzer, and Dale C. Krause. 9 Jan 73, 10p NOAA-73062211
Contract N00014-68-A-0215-0003, Grant NSF-GA-21164
Prepared in cooperation with Univ. of South Florida, St. Petersburg. Marine Science Inst.
Pub. in Marine Geology, v14 p179-190, 1973.

Descriptors: (*Oceanbottoms, *North Atlantic Ocean), (*Seamounts, North Atlantic Ocean), Structural geology, Bathymetry, Seismic reflection, Topography, Ocean currents, Sediments.

The topography in the Corner seamounts area in the western North Atlantic was studied to determine its relationship to the sedimentation pattern. The areas of anomalously thick sediment accumulation that are found on the north side of the seamounts are related to volcanic activity as well as paleocurrent and wind patterns. An irregular sediment surface has been formed by slump structures and actively eroding bottom currents, the latter as evidenced by high particulate iron concentrations in the bottom water. (Author)

COM-73-11553/7GA Reprint
National Oceanic and Atmospheric Administration, Miami, Fla. Atlantic Oceanographic and Meteorological Labs.
ATMOSPHERIC EFFECTS ON OCEAN SURFACE TEMPERATURE SENSING FROM THE NOAA SATELLITE SCANNING RADIOMETER,
George A. Maul, and Miriam Sidran. 28 Dec 72, 9p
NOAA-73062212
Prepared in cooperation with National Marine Fisheries Service, Miami, Fla. Revision of report dated 20 Oct 72. Sponsored in part by National Aeronautics and Space Administration, Washington, D. C. and National Environmental Satellite Service Environmental Science Group.
Pub. in Jnl. of Geophysical Research, v78 n12 p1909-1916, 20 Apr 73.

Descriptors: (*Oceans, Surface temperature), (*Sea surface effects detection, Correction), Cloud cover, Air water interactions, Meteorological satellites, Radiometers, Meteorological instruments.
Identifiers: *Ocean surface.

Theoretical effects of atmospheric state, nadir angle, cloud amount, cloud height, and random noise on temperature data from the NOAA series satellites are investigated. A correction scheme for cloud-free conditions is developed that is essentially free of bias. A reasonable error estimate for the total system is of the order of 2K. (Modified author abstract)

COM-73-11595/8GA Reprint
National Oceanic and Atmospheric Administration, Miami, Fla. Atlantic Oceanographic and meteorological Labs.
LINEAR SHOALS ON THE ATLANTIC INNER CONTINENTAL SHELF, FLORIDA TO LONG ISLAND,
David B. Duane, Michael E. Field, Edward P. Meisburger, Donald J. P. Swift, and S. Jeffress Williams. 1972, 53p NOAA-73080937
Contract DACW72-69-C-0016, Grant NSF-GA-27305
Pub. in Shelf Sediment Transport, 1972, p447-498.

Descriptors: (*Continental shelves, Sediments), Sands, Littoral current, Submarine topography, Sediment transport, Ocean currents, Atlantic Ocean.
Identifiers: Shoal development.

The inner Atlantic continental shelf from Long Island to Florida is characterized by fields of linear, northeast trending shoals. The shoals exhibit up to 30 ft of relief, have side slopes of a few degrees and extend for tens of miles. Clusters of linear shoals merge with the shoreface in water as shallow as 10 ft. Most of the shoals out to depths of 120 ft have been examined by means of seismic profiling, precision depth profiling, grab sampling, coring; current monitoring has been conducted on a few shoals. These inner-shelf sand bodies or shoals can be grouped as arcuate and linear. Linear shoals may radiate from estuary mouths, as a second order structure on arcuate, inlet-associated shoals, or may occur on the open coast. Linear shoals on the open coast may be shoreface-connected or isolated. All linear shoals of the open coast form a small angle with the coast line; most open northward regardless of presumed direction of net littoral drift. Seismic reflection profiles show the linear and arcuate cape-associated shoals to be plano-convex features, some exhibiting internal inclined bedding structures, resting upon a featureless, nearly horizontal stratum. It seems clear, however, that the shoals are formed by nearshore processes. (Modified author abstract)

COM-73-11633/7GA PC$7.25/MF$1.45
Moss Landing Marine Labs., Calif.
OCEANOGRAPHIC OBSERVATIONS IN MONTEREY BAY, CALIFORNIA JANUARY 1972 TO APRIL 1973,
Annual rept. on Part 3,
William W. Broenkow, and Sandra R. Benz. 1973, 340p Contrib-39, CASUC-MLML-TP-73-03
NOAA-73091909
Contract NOAA-2-35137

Descriptors: (*Oceanographic data, *Monterey Bay), Hydrography, Temperature, Salinity, Dissolved gases, Oxygen, Nutrients, Silica, Weather, California.

This report completes the hydrographic data series obtained during 27 monthly oceanographic cruises in Monterey Bay, California. The data includes those obtained during Cruises 21-36 during the period January 1972--April 1973. Oceanographic data tables presented show station position, hydrography, temperature, salinity dissolved oxygen, nutrient ions and reactive silica, and weather conditions.

COM-73-11648/5GA PC$4.25/MF$1.45
Moss Landing Marine Labs., Calif.
SOME ASPECTS OF THE TEMPERATURE, OXYGEN AND NUTRIENT DISTRIBUTIONS IN MONTEREY BAY, CALIFORNIA.
Annual rept. on Part 1,
William M. Smethie, Jr. 1973, 108p Contrib-36, CASUC-MLML-TP-73-01 NOAA-73091901
Contract NOAA-2-35137,

Descriptors: (*Nutrients, *Monterey Bay), Seasonal variations, Temperature, Dissolved gases, Oxygen, Upwelling, Submarine canyons, Photosynthesis, Circulation, Bays(Topographic features), Ocean currents, Sewage, Ammonia, California.

Seasonal variations in temperature, dissolved oxygen, and nutrients in the nearshore areas and in the canyon area of Monterey Bay, California during 1971-1972 were similar. During upwelling periods, however, water in the nearshore areas was higher in temperature and oxygen and lower in nutrients than water in the canyon area. This was caused by upwelled water moving north and south of the canyon into counter-clockwise and clockwise flow in the northern and southern ends of the bay respectively. The water was heated by insolation and depleted of its nutrients by photosynthesis during this movement. The residence time of water in the nearshore northern and southern bay during upwelling is estimated to be 3 to 8 days, and this fits well into the above circulation pattern and average measured current velocities of 10 to 15 cm/sec. There is some evidence that this circulation pattern and the estimated residence time may be also valid for non-upwelling periods. Upwelling apparently occurred in Monterey Submarine Canyon at rates of 0.4 to 2.9 m/day and was stronger in 1971 than 1972. (Modified author abstract)

COM-73-11676/6GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
REMOTE SENSING OF THE OCEAN SURFACE. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1970-Sep 73,
Elizabeth A. Harrison. Oct 73, 106p* NTIS-WIN-73-048
Supersedes NTIS-PK-42.

Descriptors: (*Remote sensing, *Oceanography), (*Bibliographies, Remote sensing), Oceans, Water pollution, Surface temperature, Ocean currents, Ocean waves, Ocean states, Aerial photography, Marine biology, Artificial satellites.
Identifiers: *Oil pollution.

The NTISearch bibliography contains 101 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. This bibliography on remote sensing of the ocean surface includes pollution detection, surface temperatures, sea states, and marine resource management. (Author)

COM-73-50811/1GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Seattle, Wash. Pacific Oceanographic Labs.
RP-1-OC-70 SOUTHEAST PACIFIC GEOPHYSICAL SURVEY.
Technical rept.,
H. R. Stevens, Jr. Feb 73, 53p NOAA-TR-ERL-261, POL-18 NOAA-73071901
Paper copy available from GPO $0.85 as C55.13:ERL261-POL18.

Descriptors: (*Oceanographic data, *Pacific Ocean), (*Ocean bottom, Pacific Ocean), Bathymetry, Magnetic properties, Gravity, Coring, Meteorological data, Geophysical surveys, Seismology, Navigation, Instrumentation, Data processing. South Pacific Ocean.
Identifiers: Seismic profiles.

This report summarizes work undertaken aboard the USC and GSS OCEANOGRAPHER during the early part of 1970. Bathymetric, magnetic, and gravity data were collected between Seattle - Tahiti - Valparaiso - Guayaquil along a trackline that extended over 15,000 nautical miles. Coring operations, heat flow measurements, and continuous seismic profiling were carried out at several locations. Special scientific projects related to chart verification, meteorology, oceanography, and terrestrial geophysics were also undertaken on each of the three legs. (Author)

N73-29386/2GA PC$9.75/MF$1.45
Danish Meteorological Inst., Charlottenlund.
OCEANOGRAPHICAL OBSERVATIONS FROM DANISH LIGHT-VESSELS AND COASTAL STATIONS.
1972, 151p ISBN-87-7478-080-6
In English and Danish.

Descriptors: *Denmark, *Oceanography, *Surface temperature, Sea ice, Tables (Data).

For abstract, see STAR 1120

N73-29441/5GA PC$3.00/MF$1.45
National Aeronautics and Space Administration, Washington, D.C.
A THERMOMETER OVER THE SEA.
N. Linko. Aug 73, 4p NASA-TT-F-15070
Tran-Transl. Into English from Leningr. Pravda (Leningrad), 8 May 1973 p 4.

Descriptors: *Airborne equipment, *Sea water, *Temperature measurement, Infrared detectors, Schools (Fish).

For abstract, see STAR 1120

PATENT-3 710 310/GA Not available NTIS
Department of the Navy Washington D C
SYSTEM FOR DETERMINING DEPTH OF WATER.
Patent,
George J. Moss, Jr., and George M. Walsh. Filed 23 Dec 70, patented 9 Jan 73, 5p Rept nos. PAT-APPL-100 932,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Oceanographic equipment, Patents), (*Depth indicators, *Patents), Hydrographic surveying, Digital systems, Signal generators, Delay circuits, Correlators, Counting methods.
Identifiers: Signal processing, PAT-CL-340-3-R.

The patent relates to a system for surveying ocean or inland water to obtain depth or slant range information without recording false signals. The system makes use of a single generator that generates a signal which starts a counter and is transmitted into the water. A portion of the generated signal is directed into the delay circuit which delays the signal that controls a gate through which the return signal is processed. The return signal is passed through an automatic gain control and the gate which is controlled by the delayed signal. The delay is sufficient to prevent processing of any false signals. The return signal that passes through the gate is detected and stops the counter which was started upon initiation of the generated signal. The counter output is directed to a digital recorder which indicates a measure of distance in accordance with the amount of time the counter was operational.

PB-223 979/6GA PC$3.25/MF$1.45
Woods Hole Oceanographic Institution, Mass.
SEDIMENTS OF THE EAST ATLANTIC CONTINENTAL MARGIN.
Preliminary rept.,
John D. Milliman. Jan 72, 22p WHOI-Ref-72-2
NSF/IDOE-73-31
Grant NSF-GX-28193
Report on International Decade of Ocean Exploration.

Descriptors: (*Continental shelves, *Sediments), (*Atlantic Ocean, Continental shelves), Continental slopes, Petrology, Geochemistry, Mineralogy, Africa.
Identifiers: International Decade of Ocean Exploration.

This is a preliminary report on the study of sediments of the East Atlantic Continental Margin. The location of sediment samples from the northern and equatorial portions of the western African continental shelf and upper slope are presented, along with a discussion of analytical techniques and some preliminary results. (Modified author abstract)

RLO-2225-T-24-14/GA PC$3.00/MF$1.45
Washington Univ., Seattle. Dept. Of Oceanography.
COLUMBIA RIVER EFFECTS IN THE NORTHEAST PACIFIC: CHEMICAL AND GEOLOGICAL STUDIES. PROGRESS REPORT, MAY 1972--MAY 1973.
R. Carpenter. May 73, 17p
Contract AT(45-1)-2225-T24

Descriptors: (*Pacific ocean, *Oceanography), (*Sedimentation, *Tracer techniques), (*Sediments, *Isotope dating), Carbon, Carbon 14, Coastal waters, Columbia river, Drill cores, Fluorine, Geography, Geologic deposits, Lead 210, Mercury, Natural radioactivity, Polonium 210, Quantitative chemical analysis, Radiometric analysis, Salinity, Sampling, Seas, Seawater, Time dependence, Variations.

For abstract, see NSA 28 04, number 08191.

RLO-2225-T-25-8/GA PC$3.00/MF$1.45
Washington Univ., Seattle. Dept. Of Oceanography.
COLUMBIA RIVER EFFECTS IN THE NORTHEAST PACIFIC: PHYSICAL OCEANOGRAPHY. PROGRESS REPORT, JUNE 1972--MARCH 1973.
C. A. Barnes, J. D. Smith, and J. R. Beck. 25 Apr 73, 17p
Contract AT(45-1)-2225, TA 25

Descriptors: (*Pacific ocean, *Oceanography), Coastal waters, Columbia river, Currents, Density, Oregon, Physical properties, Seasonal variations, Seawater, Temperature measurement, Washington.

For abstract, see NSA 28 04, number 10609.

RLO-2227-T-12-38/GA PC$5.25/MF$1.45
Oregon State Univ., Corvallis.
EFFECTS OF OCEAN WATER ON THE SOLUBLE-SUSPENDED DISTRIBUTION OF COLUMBIA RIVER RADIONUCLIDES.
D. W. Evans. Jun 73, 65p

Descriptors: (*Columbia river, *Radionuclide migration), (*Cobalt 60, *Diffusion), (*Chromium 51, Diffusion), (*Manganese 54, Diffusion), Adsorption, Antimony 124, Aqueous solutions, Desorption, Estuaries, Hapo, Pacific ocean, Particles, Radioactive waste disposal, Salinity, Scandium 46, Seawater, Sediments, Silt, Zinc 65.

For abstract, see NSA 28 04, number 08135.

8K. Seismology

COM-73-50828/5GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Boulder, Colo. Earth Sciences Labs.
CONTRIBUTIONS TO SEISMIC ZONING.
Technical rept.,
Samuel T. Harding. May 73, 101p NOAA-TR-ERL-267, ESL-30 NOAA-73082007
Paper copy available from GPO $1.30 as C55.13:ERL267-ESL30.

Descriptors: (*Seismic surveys, *Land use zoning), Earthquakes, Structural engineering, Earthquake resistant structures, Building codes.
Identifiers: Ground motion, Caracas(Venezuela), San Fernando Earthquake.

The papers included in this report were first presented at the International Conference on Microzonation for Safer Construction held in Seattle, Washington, October 30 - November 3, 1972. The topics discussed reflect a major area of interest of NOAA's Seismological Research Group in the Earth Sciences Laboratories of ERL. The purpose of the papers is to present a unique approach to seismic zoning and to examine some of the important factors involved in the zoning process. The titles of the papers are the following: A technique for seismic zoning: general consideration and parameters; Analysis of completeness of the earthquake sample in the Puget Sound area; A technique for seismic zoning: analysis of earthquake locations and mechanisms in northern Utah, Wyoming, Idaho, and Montana; Studies of site amplification in San Fernando; Soil amplification studies in areas damaged by the Caracas earthquake of July 29, 1967; Techniques for seismic zoning - structural considerations; A technique for seismic zoning: economic considerations.

PB-223 969/7GA PC$7.50/MF$1.45
California Inst. of Tech., Pasadena. Earthquake Engineering Research Lab.
ANALYSES OF STRONG MOTION EARTHQUAKE ACCELEROGRAMS. VOLUME IV. FOURIER AMPLITUDE SPECTRA. PART D. ACCELEROGRAMS IID056 THROUGH IID070,
M. D. Trifunac, A. G. Brady, and D. E. Hudson.
Jul 73, 107p EERL-73-102
Grant NSF-GK-28098
See also PB-222 514.

Descriptors: (*Earthquakes, Data processing), (*Seismic waves, Spectrum analysis), (*Dynamic structural analysis, Buildings), Accelerometers, Digital recording, Power spectra, Fourier analysis, Dynamic response.
Identifiers: Ground motion, Earthquake engineering.

The report is the fourth (Part D) of a series (Volume IV series) presenting Fourier amplitude spectra for earthquake ground motions and for structural response accelerations. Volume IV, Part A, Report No. EERL 72-100 included an introduction summarizing Fourier spectrum techniques in earthquake engineering as a background to the use of the data. For each earthquake accelerogram, two spectrum plots are given-a Fourier amplitude spectrum versus frequency on a linear scale, and a log-spectrum, log-frequency plot. In the series, Fourier amplitude spectra will be given for all corrected accelerograms, including building response measurements. The corrected records analyzed in this report, Volume IV, Part D, appeared in Volume II, Part D, Report No. EERL 72-52. Their

uncorrected versions were published in Volume I, Part D, Report No. EERL 71-21. (Author)

UCRL-51318/GA PC$5.45/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
SIMULATION OF THE LLL BENIOFF SEISMIC SYSTEM.
M. D. Denny. 4 May 73, 54p
Contract W-7405-Eng-48

Descriptors: (*Nuclear explosions, *Seismic waves), (*Seismographs, *Computer codes), Nevada test site, Seismic detection, Seismology, Simulation, Testing.

For abstract, see NSA 28 06, number 12832.

8L. Snow, Ice, and Permafrost

AD-768 099/4GA PC$5.50/MF$1.45
Cold Regions Research and Engineering Lab Hanover N H
BIBLIOGRAPHY ON COLD REGIONS SCIENCE AND TECHNOLOGY. VOLUME XXVII. PART 1.
Jul 73, 222p* Rept no. CRREL-12-27-1
See also AD-752 084 and Part 2, AD-768 100.

Descriptors: (*Polar regions, *Bibliographies), Abstracts, Ice, Permafrost, Pipes, Construction, Snow, Hail, Frost heave, Sea ice, Freezing, Metals, Glaciers, Melting, Soil mechanics, Foundations(Structures), Trafficability.
Identifiers: Tundra.

The Bibliography on Cold Regions Science and Technology, CRREL Report 12, was first published in 1951 and is a continuing publication of the Cold Regions Bibliography Project in the Science and Technology Division of the Library of Congress. It is sponsored by and prepared for the Cold Regions Research and Engineering Laboratory (formerly Snow, Ice and Permafrost Research Establishment) of the U.S. Army Corps of Engineers. The present volume contains material accessioned between July 1972 and June 1973. The volume consists of two parts, each separately bound. Pt. 1 contains the full citation of 3104 items, in many cases with abstracts.

AD-768 100/0GA PC$5.75/MF$1.45
Cold Regions Research and Engineering Lab Hanover N H
BIBLIOGRAPHY ON COLD REGIONS SCIENCE AND TECHNOLOGY. VOLUME XXVII. PART 2.
Jul 73, 228p* Rept no. CRREL-12-27-2
See also Part 1, AD-768 099.

Descriptors: (*Polar regions, *Bibliographies), Indexes, Ice, Permafrost, Snow, Construction, Pipes, Construction materials, Soil mechanics, Foundations(Structures), Glaciers, Freezing, Sea ice, Melting, Thermal conductivity.
Identifiers: Frozen soils.

The report, part two of a two part series, contains the author and subject indexes.

AD-768 169/5GA PC$3.75/MF$1.45
Cold Regions Research and Engineering Lab Hanover N H
ICEBREAKING BY TOW ON THE MISSISSIPPI RIVER.
Special rept.,
G. D. Ashton, S. L. DenHartog, and B. Hanamoto. Aug 73, 77p Rept no. CRREL-SR-192

Descriptors: (*Ice, Fracture(Mechanics)), (*Rivers, Ice), Test methods, Barges, Drag, Boats, Tensile properties, River currents, Flexural strength, Thrust.
Identifiers: *Mississippi River, *Ice break up *Ice navigation, *River ice.

A field investigation of icebreaking by the motor vessel Renee G, operating on the Mississippi River between Alton, IL, and Fort Madison, IA, is reported. The operation encountered a wide variety of ice conditions and was performed with a variety of barge configurations and arrangements. Important qualitative observations of the nature and difficulties encountered while icebreaking were made; and, by instrumenting the propeller shafts and using load cells between the towboat and the barges, quantitative information was obtained on the resistance encountered while icebreaking. Also described are the effects of repeated passage through an ice cover, navigation procedures peculiar to icebreaking, and minor damage sustained by the towboat. (Author)

AD-768 170/3GA PC$2.75/MF$1.45
Cold Regions Research and Engineering Lab Hanover N H
SALINITY VARIATIONS IN SEA ICE.
Research rept.,
Gordon F. N. Cox, and Wilford F. Weeks. Aug 73, 25p Rept no. CRREL-RR-310
Grant NSF-AG-344

Descriptors: (*Sea ice, *Salinity), Thickness, Terrain, Arctic Regions.
Identifiers: Beaufort Sea.

The salinity distribution in multiyear sea ice is dependent on the ice topography and cannot be adequately represented by a single average profile. The cores collected from areas beneath surface hummocks generally showed a systematic increase in salinity with depth. The cores collected from areas beneath surface depressions were much more saline and displayed large salinity fluctuations. Salinity observations from sea ice of varying thicknesses and ages collected at various arctic and subarctic locations revealed a strong correlation between the average salinity of the ice and the ice thickness. An annual cyclic variation of the mean salinity probably exists for multiyear sea ice. The mean salinity should reach a maximum at the end of the growth season and a minimum at the end of the melt season. (Modified author abstract)

AD-768 279/2GA PC$3.50/MF$1.45
Naval Civil Engineering Lab Port Hueneme Calif
ICE-ENGINEERING-SUMMARY OF ELASTIC PROPERTIES RESEARCH AND INTRODUCTION TO VISCOELASTIC AND NONLINEAR ANALYSIS OF SALINE ICE.
Technical rept. Mar 71-Jun 72,
M. G. Katona, and K. D. Vaudrey. Aug 73, 72p
Rept no. NCEL-TR-797

Descriptors: (*Sea ice, Mechanical properties), (*Landing fields, Sea ice), Elasticity, Compressive properties, Loading(Mechanics), Tensile properties, Flexural strength, Creep, Strain(Mechanics), Salinity, Temperature.
Identifiers: Finite element analysis.

Increasing operational use od ice areas in polar regions has heightened the requirement for improved knowledge and techniques to analyze the behavior of sea ice. Previous studies on elastic behavior are reviewed with emphasis placed on plate analysis. Classical plate theory and the finite element method are compared in analyzing ice plates, with special attention given to sea-ice airfields. Since elastic analysis is not totally representative of actual ice behavior, a general formulation is presented which gives the assumptions and procedures for both viscoelastic and nonlinear domains of sea-ice behavior. A laboratory program is being initiated to determine material properties that are necessary to extend sea-ice analysis into the inelastic range. (Author)

E73-11038/GA PC$3.00/MF$1.45
Environmental Research and Technology, Inc., Lexington, Mass.
EVALUATE THE APPLICATION OF ERTS-A DATA FOR DETECTING AND MAPPING SNOW COVER.
Bimonthly progress rept. no. 5, 10 Jul-10 Sep 73,
James C. Barnes. 27 Sep 73, 5p ERT-P-407-7
NASA-CR-133884
Contract NAS5-21803

Descriptors: Snow cover, Mapping, Arizona, California, Earth resources program, Return beam vidicons, Multispectral band scanners.

The author has identified the following significant results. It is concluded from data analysis that the amount of information in ERTS-1 imagery with practical application to snow mapping is substantial. For the Arizona and California test sites, it appears that the extent of the mountain snowpacks can be mapped from ERTS-1 data in more detail than is depicted in aerial survey snow charts. In the Salt-Verde watershed, the agreement between the percentage of the area snow covered as measured from the ERTS-1 data and from aerial survey charts is generally well within 10%. In nearly all of the areas in which greater discrepancies occur, the differences can be explained by changes in snow cover during the interval between the two observations. In the southern Sierra Nevada, the agreement between ERTS-1 data and aerial survey charts is of the order of 5% in all cases, except for the Kaweah Basin on one date. In addition to comparative analysis with aerial snow charts, the ERTS-1 data have also been compared with high altitude aircraft photography. The ERAP data have provided an excellent source of correlative information. The results of the comparative analysis indicate that although small details in the snow line that cannot be detected in the ERTS-1 data can be mapped from higher resolution aircraft data, the boundaries of snow cover can be mapped just as accurately from ERTS-1 data.

E73-11050/GA PC$3.00/MF$1.45
Alaska Univ., College.
SEA, ICE AND SURFACE WATER CIRCULATION, ALASKAN CONTINENTAL SHELF.
Bimonthly progress rept. no. 7,
F. F. Wright, G. D. Sharma, and J. J. Burns.
Original contains color imagery. Original photography may be purchased from the EROS Data Center, 10th and Dakota Ave., Sioux Falls, S. D. 57198. ERTS.

Descriptors: Alaska, Water circulation, Sea water, Ice, Surface water, Continental shelves, Earth resources program, Sediment transport, Salinity, Temperature measurement.

The author has identified the following significant results. Salinity and temperature measurements in the Bering Sea indicate that the Yukon River outflow extends as far as 200 km from its mouth. The fresh water flow from the Yukon River flows north and east into Norton Sound. Various levels of suspended sediment concentration in waters have been successfully color coded using a VP-8 color density slicing image analyzer. The 70mm negative transparencies have provided the best fit for the ground truth observations.

PB-223 905/1GA PC$3.00/MF$1.45
Alaska Univ., College. Inst. of Water Resources.
A STUDY OF THE FREEZING CYCLE IN AN ALASKAN STREAM.
Completion rept.,
Carl S. Benson. Mar 73, 26p IWR-36 W73-14754, OWRR-A-012-ALAS(1)

Descriptors: (*Streams, *Ice formation), (*Freezing, Streams), Alaska, Goldstream Creek, Freezeup, Frazil ice, Temperature, Supercooling, Hydrology, Petrography, Crystal growth.

Goldstream Creek, at the Alaskan research site, is about 8 m wide and, prior to freezeup in October, it varies from 20 to 40 cm deep across the main test

section. During the last 3 weeks prior to formation of a complete surface ice cover, the water temperature varies within a range of about 0.2C. Early in the nightly cooling cycle it drops to -0.01C to -0.05C for periods of several minutes up to several hours. Discs of frazil ice, 1 to 6 mm in diameter and 0.025 to 0.1 mm thick, form in the supercooled water and gradually raise its temperature to near 0C. At this stage, dendritic forms begin to grow on the discs. These adhere to the stream bottom and crystals continue to grow as turbulent flow of slightly supercooled water transports the heat of fusion to the stream's surface, where it is lost as long-wave radiation or by advection or evaporation. This process produces underwater ice. During breakup, in May, the streambed was always full of ice and the overflowing floodwaters peeled off the ice layers.

8M. Soil Mechanics

AD-768 291/7GA PC$3.00/MF$1.45
Naval Civil Engineering Lab Port Hueneme Calif
ENGINEERING PROPERTIES OF A PELAGIC CLAY.
Technical note Apr 72-Jan 73,
H. J. Lee. Aug 73, 35p Rept no. NCEL-TN-1296

Descriptors: (*Engineering geology, Ocean bottom), (*Clay, *Ocean bottom), (*Soil mechanics, Clay), Moisture, Grain size, Shear stresses, Compressive properties, Pacific Ocean.
Identifiers: Triaxial tests, Vane shear tests, Consolidation.

Pelagic clay is a common ocean soil type covering over 30 percent of the seafloor. Two high quality box core samples of pelagic clay were obtained and subjected to index and engineering property testing. The results of tests on both cores were similar indicating little areal variability. The shear strength near the soil-water interface was about one psi, a relatively high value, and the soil was found to be virtually incompressible up to a compressive stress of about four psi. When remolded, the strength of the soil was significantly decreased, by as much as a factor of six. The soil was also found to be very compressible beyond a stress of four psi. A technique was developed for using triaxial test results to derive shear strengths below the level of sampling. The resulting strength profile indicates a very gradual increase of strength with depth. Implications regarding the use of direct embedment anchors are discussed. (Author)

CONF-730316-1/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
DEVELOPMENT OF HIGH-VOLTAGE RADIOGRAPHY AND DUAL MICRODENSITOMETRIC TECHNIQUES FOR EVALUATING STRESSED ROCK SPECIMENS.
B. E. Foster, S. D. Snyder, R. W. McClung, and W. J. Godzinsky. 1972, 24p

Descriptors: (*Sandstones, *Industrial radiography), (*Shales, Industrial radiography), (*Limestone, Industrial radiography), Densitometers, Stresses.

For abstract, see NSA 28 04, number 10554.

N73-29377/1GA PC$3.00/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
ELECTRIC CONDUCTIVITY OF WATER EXTRACTS FROM SOIL AS A MEASURE OF THEIR IONIC STRENGTH.
S. Crnogorac. Aug 73, 6p NASA-TT-F-15044
Contract NASW-2481
Tran-Transl. Into English from Zemljiste I Biljka (Belgrade), V. 15, No. 2, 1966 p 127-131.

Descriptors: *Electrical resistivity, *Ground water, *Soil science, Ionization.

For abstract, see STAR 1120

N73-29379/7GA PC$3.00/MF$1.45
Scripta Publishing Corp., Washington, D.C.
DETERMINATION OF THE CONCENTRATION OF WATER-SOLUBLE SALTS IN SOILS ON THE BASIS OF THE COEFFICIENT OF ELECTRICAL CONDUCTIVITY.
S. N. Aleshin, and G. A. Slovtsova. Aug 73, 11p
NASA-TT-F-15045
Contract NASW-2484
Tran-Transl. Into English from Izv. Timiryazev. Sel'Skokhoz. Akad. (Moscow), No. 6, 1967 p 136-140.

Descriptors: *Salts, *Soil science, *Solubility, Electrical resistivity, Electrolytes.

For abstract, see STAR 1120

8N. Terrestrial Magnetism

COM-73-11581/8GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Space Environment Lab.
THE FIELD LEVELS NEAR MIDNIGHT AT LOW AND EQUATORIAL GEOMAGNETIC STATIONS,
W. H. Campbell. 1 Jan 73, 21p NOAA-73071719
Pub. in Jnl. of Atmospheric and Terrestrial Physics, v35 p1127-1146 1973.

Descriptors: (*Geomagnetism, Diurnal variations) Magnetospheric ring currents, Ionospheric disturbances, Electrojets, Solar wind, Magnetic disturbances, Magnetic fields.

The study concerns the day-to-day behavior of the geomagnetic field level near the midnight hours. Using data from a distribution of observatories from the pole to the Equator in the American hemisphere and around the Earth in low latitudes, it was found that the midnight level changes below about 40 degrees latitude vary in consistent fashion to indicate a current source at an antisolar position within the nightside magnetosphere. This source had many of the characteristics expected from a magnetospheric tail and ring-current response to disturbances brought into the Earth's environment by the solar wind. (Author)

JPRS-60100/GA PC$2.75/MF$1.45
Joint Publications Research Service, Arlington, Va.
THE INFORMATION CAPACITY OF THE GRADIENT METHOD OF MEASURING THE EARTH'S MAGNETIC FIELD,
E. N. Roze. 21 Sep 73, 6p
Trans. of Geomagnetizm i Aeronomiya (USSR) v13 n4 p762-764 1973.

Descriptors: (*Geomagnetism, Magnetic measurement), Magnetic fields, Gradients, Numerical analysis, Translations, USSR.

N73-29388/8GA PC$4.00/MF$1.45
Danish Meteorological Inst., Charlottenlund.
RUDE SKOV GEOPHYSICAL OBSERVATORY MAGNETIC RESULTS, 1969.
1973, 37p ISBN-37-7478-065-4

Descriptors: *Denmark, *Geomagnetism, Geophysical observatories, Tables (Data).

For abstract, see STAR 1120

PB-223 973/9GA PC$3.00/MF$1.45
Woods Hole Oceanographic Institution, Mass.
EASTERN ATLANTIC CONTINENTAL MARGIN GEOMAGNETIC DATA.
Preliminary rept.,
J. Mascle, and J. D. Phillips. Jan 72, 17p WHOI-Ref-72-3 NSF/IDOE-73-32
Grant NSF-GX-28193

Descriptors: (*Geomagnetism, *Atlantic Ocean), Magnetic surveys, Magnetic anomalies, Oceanographic surveys, Aerial surveys, Maps.

Identifiers: MAGNET project, International Decade of Ocean Exploration.

Airborne and shipboard geomagnetic profiles for the eastern Atlantic Ocean off Africa have been mapped to serve as background for additional measurements to be made during the East African Continental Margin program of the International Decade of Ocean Exploration. The report consists of two charts, one off southwestern Africa and the other off northwestern Africa. (Author)

9. ELECTRONICS AND ELECTRICAL ENGINEERING

9A. Components

AD-767 757/8GA Reprint
Illinois Univ Urbana Dept of Electrical Engineering
APPLICATION OF THE TRANSMISSION LINE EQUIVALENT CIRCUIT MODEL TO THE ANALYSIS OF THE PN JUNCTION ADMITTANCE UNDER D.C. BIAS,
C. F. Smiley, L. D. Yau, and C. T. Sah. 26 Dec 72, 8p AFOSR-TR-73-1853
Grants AD-AFOSR-2067-71, NSF-GK-30283
Revision of report dated 6 Jul 72.
Availability: Pub. in the Solid-State Electronics, v16 p895-901 1973.

Descriptors: (*Diodes(Semiconductor), Mathematical models), Admittance, Silicon, Doping, Gold, Space charges, Matrix algebra.
Identifiers: *Equivalent circuits, *Semiconductor junctions.

Exact non-equilibrium one-energy-level numerical solutions of the admittance of a p+n junction are obtained from the nonuniform transmission line equivalent circuit model. Capacitance and conductance curves for equilibrium and reverse-biased gold-doped silicon diode are calculated using experimental values of emission and capture rates. Comparisons between theoretical and experimental frequency dependences of the admittance using new experimental capture rates show good agreements over a wide range of reverse bias. (Author)

AD-767 805/5GA Reprint
California Univ Berkeley Coll of Engineering
AMPLIFICATION OF ACOUSTIC SURFACE WAVES IN PIEZOELECTRIC SEMICONDUCTORS,
Stefan Swierkowski, Theodore Van Duzer, and Charles W. Turner. 4 Dec 73, 10p AFOSR-TR-73-1888
Contracts F44620-71-C-0087, DA36-039-AMC-02164(E)
Revision of report dated 21 Mar 72.
Availability: Pub. in Institute of Electrical and Electronics Engineers Transactions on Sonics and Ultrasonics, vSU-20 n3 p260-267 Jul 73.

Descriptors: (*Semiconductor devices, Acoustic properties), Piezoelectric crystals, Semiconductors, Gallium arsenides, Indium antimonides, Cadmium sulfides, Zinc compounds, Oxides, Surface properties, Wave transmission, Carriers(Semiconductors), Gain.
Identifiers: *Piezoelectric semiconductors, Acoustic surface waves, Surface waves, Microwave acoustics, Zinc oxides.

A method is developed for the analysis of surface-wave amplication in piezoelectric semiconductors which introduces an equivalent permittivity in the carrier-free surface-wave analysis. Detailed calculations are done for the materials of the (bar 4)3m point group of (001) cut and (110) propagation direction, and the 6mm point group of (001) cut and (100) propagation direction; these groups include several III-V and II-VI compounds such as GaAs, InSb, ZnO, and CdS, and the cuts and

propagation directions are those considered most useful for amplification. Numerical calculations are made for GaAs and CdS and certain key features are shown to be similar to those of bulk-wave theory; the magnitude of the gain, however, is seen to be significantly reduced. An effective electromechanical coupling constant is introduced to enable calculation of the surface-wave gain using analytic bulk-wave theory. (Author)

AD-767 925/1GA PC$2.75/MF$1.45
Naval Research Lab Orlando Fla Underwater Sound Reference Div
PROPOSAL FOR THE DEVELOPMENT OF UNDERWATER SOUND TRANSDUCERS UTILIZING MAGNETOSTRICTIVE RARE EARTH-IRON ALLOYS.
Memorandum rept.,
Robert W. Timme, and Norman C. Koon. 15 Oct 73, 10p Rept no. NRL-MR-2663

Descriptors: (*Magnetostrictive elements, Underwater sound equipment), Sonar projectors, Hydrophones, Terbium compounds, Holmium compounds, Dysprosium compounds, Iron compounds, Intermetallic compounds.

An investigation of the use of magnetostrictive rare earth-iron alloys as active elements of underwater sound transducers is proposed. The primary objective of the program would be a transducer having an acoustic output or sensitivity equal to or greater than a piezoelectric transducer of similar size, a high resistance to shock, and performance stability with respect to time. (Author)

AD-767 963/2GA PC$3.00/MF$1.45
Naval Underwater Systems Center New London Conn New London Lab
A STRUCTURAL ANALYSIS OF A MULTICONDUCTOR CABLE.
Research rept.,
Arthur D. Carlson, Rolf G. Kasper, and Michael A. Tucchio. 19 Sep 73, 46p* Rept no. NUSC-TR-4549

Descriptors: (*Electric cables, Oceanographic equipment), Underwater equipment, Structural properties, Stresses, Deformation, Torque.
Identifiers: Finite element analysis.

A structural analysis employing finite elements is applied to a multiconductor armored cable with good results. The interactions of the cable components, i.e., armor, conductors, and plastics, are determined. Good correlation is shown between the analytic results and a test. The cable kink problem is also discussed.

AD-768 131/5GA PC$3.50/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
DETECTION OF ELECTRICAL CONTACT WEAR USING VIBRATIONAL ANALYSIS,
Neil H. Schiller. May 73, 70p Rept no. USAMC-ITC-1-73-19

Descriptors: (*Electric connectors, Degradation), Failure(Mechanics), Vibration, Sound, Detection, Power spectra, Fatigue(Mechanics), Life expectancy.
Identifiers: Electric contacts, Wear, Vibration analysis.

The paper examines how the sound vibrations produced during operation of an electric contact are related to the number of operations to which it has been subjected. The examination is accomplished in two parts. First, the theories underlying Bridge and Arc Transfer phenomena in electric contacts are reviewed. This information is then used to predict how contact wear can best be detected. The second part of the paper experimentally investigates how sound vibrations produced during operation of an electrical contact are related to the number of operations to which it has been subjected. The investigation is accomplished by measuring the sound produced during contact operation. The power spectral density of the sound records is then computed. Changes in the power spectral density records are then correlated to contact wear. The results of the experiment show that a pre-failure condition is detectable in the two electrical contacts tested. (Author)

AD-768 142/2GA PC$7.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
CHIP AND WIRE ASSEMBLY AND PACKAGING FACILITIES FOR PROTOTYPE MICROELECTRONIC INTEGRATED CIRCUITS,
James H. Donnelly. Jul 71, 96p Rept no. USAMC-ITC-2-71-01

Descriptors: (*Integrated circuits, Industrial production), Costs, Industrial equipment, Packaging, Labor, Industrial plants.
Identifiers: Cost analysis.

The goal of the report is to provide a realistic and comprehensive cost estimate for two microelectronic chip and wire assembly and final packaging facilities for prototype microelectronic hybrid integrated circuits. An analysis is made of typical costs that should be anticipated for the initial installation, operation, and staffing of chip and wire assembly and packaging facilities. (Modified author abstract)

AD-768 216/4GA PC$3.50/MF$1.45
Hughes Aircraft Co Fullerton Calif Ground Systems Group
INVESTIGATION OF NOVEL HEAT REMOVAL TECHNIQUES FOR POWER TRANSISTORS.
Final rept. 15 Nov 71-15 Sep 73,
M. A. Merrigan. Sep 73, 69p* Rept no. FR-73-10-840 ECOM-0021-F-72
Contract DAAB07-72-C-0021

Descriptors: (*Transistors, *Heat exchangers), Cooling, Radiofrequency power, Very high frequency.
Identifiers: *Heat pipes, Power transistors.

The feasibility of new cooling methods for VHF power transistors capable of providing a reduction in junction temperature of 33%, compared to conventionally packaged devices was investigated. Design objective for the transistors are 25 watts CW power from a 28-volt supply with a minimum power gain of 6 dB. The electrical characteristics of the devices are to be within 10% of conventional devices, the volume no more than 4 times, and the weight no more than 5 times that of equivalent hermetically sealed devices. Achievement of these objectives was based on the application of heat pipe cooling techniques to the chip surface, within a standard TO-package. The conclusions to be drawn from the program are that the cooling method provides significant improvement in the thermal characteristics of the VHF power transistors without loss of RF performance. No significant deterioration of performance was noted in the extended duration high temperature testing. These goals were achieved without significant change in the transistor case size or weight. The cooling techniques demonstrated on this program are recommended for production development. (Author)

BARC-626/GA PC$4.00/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
TRANSISTOR CURVE TRACER TYPE OS779 FUNCTIONAL DESCRIPTION AND APPLICATIONS.
M. R. Ahuja, and V. K. Menon. 1972, 39p
U.S. Sales Only.

Descriptors: (*Semiconductor devices, *Testing), Diode tubes, Junction diodes, Performance, Transistors.

For abstract, see NSA 28 06, number 15125.

CEA-CONF-2240/GA PC$3.00/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
STUDY OF FAILURE OF SOME INTEGRATED CIRCUITS IN A SCANNING ELECTRON MICROSCOPE.
C. Masimbert. 16 Oct 72, 9p CONF-720990-1
In French. U.S. Sales Only.

Descriptors: (*Integrated circuits, *Reliability), Electron microscopes.

For abstract, see NSA 28 04, number 10550.

CEA-CONF-2244/GA PC$3.00/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
DETERMINATION OF THE LIFETIME OF IMPLANTED DIODES BY ELECTRICAL MEASUREMENTS.
J. L. Combasson. 18 Oct 72, 8p CONF-720990-3
In French. U.S. Sales Only.

Descriptors: (*Semiconductor diodes, *Efficiency), Annealing, Ion implantation, Layers, Measuring methods.

For abstract, see NSA 28 04, number 10553.

COM-73-11659/2GA PC$4.00/MF$1.45
National Bureau of Standards, Boulder, Colo. Electromagnetics Div.
PULSE TESTING OF RF AND MICROWAVE COMPONENTS.
Interim rept.,
William L. Gans, and N. S. Nahman. Jul 73, 38p NBSIR-73-325

Descriptors: (*Microwave equipment, Frequency response), (*Voltmeters, Frequency response), Fourier transformation, Transfer functions, Low pass filters, Attenuators, Calibrating.

The interim report is concerned with the application of time domain measurements to the determination of frequency domain parameters. The theory is developed for the calculation of the parameter (S sub 21)(Omega) from time domain insertion measurements. Experimental results are presented for a 4.1 GHz low pass filter and coaxial attenuators of 10 dB, 20 dB and 40 dB. Also presented is an experimental justification showing the lack of feasibility of applying time domain techniques to the frequency response calibration of certain vacuum-tube voltmeters.

LYCEN-7276/GA PC$3.50/MF$1.45
Lyon Univ. (France). Institut de Physique Nucleaire.
IRRADIATION OF BIPOLAR TRANSISTORS IN THE 10 EXP 12 RAD/SEC RANGE USING ELECTRON PULSES.
R. Gaillard, and R. Genre. Dec 72, 26p
In French. U.S. Sales Only.

Descriptors: (*Transistors, *Physical radiation effects), Electric currents, Electric potential, Electron beams, Pulsed irradiation, Radiation doses.

For abstract, see NSA 28 04, number 08285.

N73-29125/4GA PC$3.75/MF$1.45
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
THE LOAD-CARRYING AND THERMAL CHARACTERISTICS OF FLAT CONDUCTOR CABLE.
G. D. Adams. Aug 73, 34p NASA-TM-X-64767

Descriptors: *Electric current, *Flat conductors, *Thermodynamic properties, Air, Electric potential, Vacuum.

For abstract, see STAR 1120

N73-29130/4GA PC$3.00/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Labor fuer Elektronik und Messtechnik.
CAMAC FINE ATTENUATOR LEM-52/11.1 AND CAMAC FINE ATTENUATOR LEM-52/11.2.
P. M. Fischer, and D. Froehlich. Dec 72, 19p
KFK-1707
Language in German.

Descriptors: *Attenuators, *Linear amplifiers, *Numerical control, Amplification, Electric potential, Spectroscopy.

For abstract, see STAR 1120

PAT-APPL-310624/GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
OVERVOLTAGE PROTECTION NETWORK.
Patent Application.
J. M. Cambra. Filed 29 Nov 72, 12p NASA-CASE-ARC-10197-1,
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Circuit protection, *Electric equipment, *Overvoltage, *Voltage regulators, Circuit breakers, Electric relays, Patent applications.

An improved overvoltage protection system is described. Electrical equipment to be protected is connected with a possible source of overvoltage via an input conductor. A fuse is connected in series with the input conductor and a spark gap is connected between the input conductor and ground for conducting the overvoltage current to ground, and for blowing the fuse to open the circuit to the equipment. A pulse attenuator network is provided between the spark gap and the electrical equipment to be protected for attenuating the pulse of energy passing through the fuse and spark gap prior to blowing the fuse. The pulse attenuator network includes additional shunt spark gaps, series inductance, and series connection of a twisted shielded pair of conductors having low voltage insulation.

PATENT-3 701 147/GA Not available NTIS
Department of the Navy Washington D C
SURFACE WAVE DEVICES FOR SIGNAL PROCESSING.
Patent,
Harper John Whitehouse. Filed 3 Feb 71, patented 24 Oct 72, 13p Rept nos. PAT-APPL-112 165,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Transducers, *Patents), Delay lines.
Identifiers: PAT-CL-340-347-DA, *Signal processing, Surface waves, Acoustic surface waves, *Acoustic delay lines, Interdigital transducers.

The general purpose of this invention is to provide a distributed transducer surface wave device used as a delay line for signal processing. The invention contemplates a unique acoustic wave device comprising at least one set, usually comprising a pair, of transducers, an input transducer, and an output transducer, each transducer comprising two sets of interdigitated electrodes mounted upon a crystal used as a substrate, with the interdigitations generally being coded for improved results.

PATENT-3 715 689/GA Not available NTIS
Office of the Secretary of the Army Washington D C
WIDEBAND MICROWAVE POWER DIVIDER.
Patent,
Gordon J. Laughlin. Filed 10 Feb 72, patented 6 Feb 73, 5p Rept nos. PAT-APPL-225 041,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Power dividers, *Patents), Strip transmission lines, Broadband, Microwave equipment.
Identifiers: PAT-CL-333-9.

The patent describes a microwave structure comprising a parallel transmission line that is bisected by a conducting septum to form two independent microstrip circuits that are in anti-phase. The conducting septum becomes a common ground plane for a pair of equal amplitude microstrip circuits that are in anti-phase relative to the common ground at points equidistant from the point of bisection of the parallel transmission line.

PATENT-3 716 424/GA Not available NTIS
Department of the Navy Washington D C
METHOD OF PREPARATION OF LEAD SULFIDE PN JUNCTION DIODES.
Patent,
Richard B. Schoolar. Filed 2 Apr 70, patented 13 Feb 73, 6p Rept nos. PAT-APPL-24 983,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Diodes(Semiconductor), Epitaxial growth), (*Photodiodes, *Patents), Semiconductor devices, Lasers, Irasers, Lead compounds, Sulfides, Manufacturing methods.
Identifiers: PAT-CL-148-175, *Lead sulfides, *Light emitting diodes, Semiconductor lasers, Lead selenides, Tin selenides, Lead tellurides, Tin tellurides.

The patent describes flat, uniform planar diodes of PbS prepared by either (1) epitaxially growing an n-type layer onto a p-type layer by depositing one layer epitaxially onto the other in a vacuum of at least 5 x 10 to the minus 5th power Torr wherein the substrate is at a temperature between 200-350C and the material to be deposited is at a temperature not lower than its sublimation point or (2) epitaxially growing a p-type layer on an n-type layer using the procedure described in (1) with the addition of vapors of a doping agent such as S, Se or Te, in the system. This method may also be applied to the closely related compounds Pb(x)Sn(1-x)Se and Pb(x)Sn(1-x)Te where x varies from 0 to 1 inclusive.

SLA-73-133/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
DEVLIB: A PDP-10 SEMICONDUCTOR DEVICE LIBRARY PROGRAM.
G. R. Case, and J. B. Meland. Apr 73, 62p

Descriptors: (*Computer codes, *D codes), (*Semiconductor devices, *Information retrieval), Pdp computers.

For abstract, see NSA 28 04, number 10485.

SLA-73-5286/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
LATCH-UP STUDIES IN SILICON CMOS INTEGRATED CIRCUITS.
B. L. Gregory, and B. D. Shafer. 5p CONF-730703-2

Descriptors: (*Mos transistors, *Radiation hardening), (*Integrated circuits, Radiation hardening), Physical radiation effects, Silicon.

For abstract, see NSA 28 06, number 12963.

SLA-73-5419/GA PC$3.25/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
SIMULATION OF RELATIVISTIC ELECTRON BEAM DIODES.
J. W. Poukey, J. R. Freeman, and F. G. Yonas. 1973, 22p CONF-730529-4

Descriptors: (*Diode tubes, *Mathematical models), (*Computer codes, *D codes), Electron beams, Electrons, Relativistic range.

For abstract, see NSA 28 05, number 12489.

SLA-73-553/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
BIBLIOGRAPHY ON VACUUM SWITCH TUBE, VACUUM ARC, AND VACUUM BREAKDOWN LITERATURE.
J. T. Grissom. May 73, 48p

Descriptors: (*Switches, *Bibliographies), (*Electric arcs, Bibliographies), (*Breakdown, Bibliographies), Anodes, Cathodes, Electron tubes, Low pressure.

For abstract, see NSA 28 06, number 15161.

SLL-73-5233-A/GA PC$3.00/MF$1.45
Sandia Labs., Livermore, Calif.
NUMERICAL TREATMENT OF MULTIPLE DIELECTRIC RELAXATION TIMES IN AN IRRADIATED TRANSMISSION LINE.
K. D. Marx. Apr 73, 9p CONF-730703-3
Contract AT(29-1)-789

Descriptors: (*Electric cables, *Physical radiation effects), (*Dielectric materials, Physical radiation effects), Data transmission, Numerical solution, Photoconductivity.

For abstract, see NSA 28 06, number 12965.

UCID-16278/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
WAVEGUIDE MODES GENERATED AT A PIPE SIZE DISCONTINUITY.
R. K. Cooper, V. K. Neil, and R. J. Briggs. 21 May 73, 9p
Contract W-7405-eng-48

Descriptors: (*Pipes, *Waveguides), (*Electron beams, *Transmission), Electric fields, Magnetic fields, Size.

For abstract, see NSA 28 06, number 15166.

9B. Computers

AAEC/E-243/GA PC$5.25/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
PDP11ASM AND PDP11SIM: A PDP11 ASSEMBLER AND A PDP11 SIMULATOR TO RUN ON AN IBM360 COMPUTER.
G. W. Cox. Nov 72, 64p
U.S. Sales Only.

Descriptors: (*Pdp computers, *Equipment), Computer codes, Ibm computers, Programming, Simulation, Testing.

For abstract, see NSA 28 06, number 15042.

AAEC/E-256/GA PC$3.75/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
AEJCL: A JCL SYNTAX CHECKING FACILITY.
I. J. Hayes. Feb 73, 33p
U.S. Sales Only.

Descriptors: (*Pdp computers, *Programming languages), (*Computer codes, *A codes), Programming, Testing.

For abstract, see NSA 28 06, number 15043.

AD-767 665/3GA PC$8.75/MF$1.45
Naval Postgraduate School Monterey Calif
A COMPUTER-GRAPHICS SEPARATION ALGORITHM FOR PATTERN CLASSIFICATION AND CLUSTER ANALYSIS.
Master's thesis,
Gilbert Paul Lauzon. Sep 73, 135p

Descriptors: (*Pattern recognition, Algorithms), (*Programming(Computers), Graphics), Classification, Statistical analysis, Cathode ray tube screens, Set theory, Iterations, Theses, Computer programs.
Identifiers: Computer graphics, *Cluster analysis, Discriminant functions, Fortran 4.

A separation algorithm applicable to the pattern classification and cluster analysis of n-dimensional (n > 2) data is presented. The algorithm reduces the dimensionality of the problem by projecting each point into a plane. This plane is presented to the user on a computer graphics console screen. The operator picks a point on the screen with a lightpen and chooses a direction of movement to achieve or increase separation, thereby causing an iteration of the algorithm. Each iteration is in fact a reorientation of the plane into which the data points are projected. Iterations continue until satisfactory separation is achieved. The algorithm is not restricted by the dimensionality of the data, nor are any distributional assumptions required. Results from six case studies indicate that the algorithm is a useful tool for the analysis of multidimensional data. (Author)

AD-767 669/5GA PC$6.25/MF$1.45
Naval Postgraduate School Monterey Calif
A CALCULATOR OPTION FOR THE TEKTRONIX 4010 COMPUTER GRAPHICS TERMINAL,
Robert William Cherry. Jun 73, 81p

Descriptors: (*Digital computers, Interfaces), Artificial intelligence, Modification kits, Logic circuits, Integrated circuits, Coding, Theses.
Identifiers: Metal oxide semiconductors, Large scale integrated circuits, Computer systems hardware, Logic design, Computer graphics, *Calculators.

Recent advances in Metal-Oxide-Semiconductor/Large-Scale-Integration (MOS/LSI) circuits have made large amounts of computational capability available in small packages. One such MOS/LSI circuit, a business-format, four-function calculator, is used to provide a fixed-function form of intelligence in the Tektronix 4010 Computer Display Terminal. Discussion of important circuit design concepts from preliminary considerations to final testing and results is presented. Sample calculations and instructions for calculator operation are given as appendices. (Author)

AD-767 690/1GA PC$3.50/MF$1.45
Naval Postgraduate School Monterey Calif
CONTROL STRUCTURES IN DIGITAL PROCESSES.
Technical rept.,
V. Michael Powers. 29 Aug 73, 51p Rept no. NPS-52PW73081A

Descriptors: (*Programming languages, Control sequences), Digital computers, Compilers, Programming(Computers).
Identifiers: Logic design, FORTRAN, MCS-4 computers, SIMPL programming language, Microprogramming, Advanced avionics digital computer, FORTRAN 4 programming language, ALGOL, PL/1 programming language.

The control space of a digital process can be viewed as a projection of the state space of the processor. This state space may be an interpretation of some underlying (perhaps physical) processor's state space. A control operator is a projection of a process step: the portion which specifies the 'next control state'. A set of elementary control structures is defined and used as a common basis for comparing the control structures in a microcomputer and several programming languages. The relationship of this view of control to several areas of computer science research is noted. (Author)

AD-767 694/3GA PC$2.75/MF$1.45
Stanford Univ Calif Dept of Computer Science
COMPUTER GENERATION OF VERTEX-GRAPHS.
Technical rept.,
N. S. Sridharan. Jul 73, 21p Rept no. STAN-CS-73-381
Contract SD-183

Descriptors: (*Programming(Computers), Graphics), (*Molecular structure, Programming(Computers)), Topology, Artificial intelligence, Mapping(Transformations).
Identifiers: Graph theory, Computer graphics, Chemical notation systems.

In connection with the problem of generating all multigraphs having a specified vertex-degree list, Lederberg has presented a tree-generation algorithm which, exploiting a canonical-lexical notational system, constructs the complete set of solutions in canonically increasing order, without redundancy. Brown, et al., have expanded the scope of generation to cyclic graphs. Their method relies upon the existence of a complete and irredundant set of vertex-graphs and the procedure consists of a series of graph labelling steps. Graph labelling allows one to assign labels from a given set to the vertices (edges) of a graph, in such a way that knowing the symmetry group of the graph, equivalent label assignments are avoided prospectively. Recent work has been directed towards supplying the vertex-graphs needed by the generator. A program has been written to generate all graphs with t trivalent and q quadrivalent vertices, from graphs having (t + 2q) trivalent vertices. This method, however, will generate redundant vertex-graphs and some issues in isomorph elimination are considered in this presentation. (Author)

AD-767 695/0GA PC$4.50/MF$1.45
Stanford Univ Calif Dept of Computer Science
SCENE ANALYSIS USING A SEMANTIC BASE FOR REGION GROWING.
Technical rept.,
Yoram Yakimovsky. Jun 73, 135p Rept nos. STAN-CS-73-380, AIM-209
Contract SD-183, ARPA Order-457

Descriptors: (*Programming(Computers), Algorithms), (*Data processing systems, Pictures), (*Pattern recognition, Photographic images), Semantics, Artificial intelligence, Statistical analysis, Decision theory, Photointerpretation, Mathematical logic, Theses.
Identifiers: *Scene analysis, Bayesian analysis, Image processing, Edge detection, Trees(Mathematics).

The problem of breaking an image into meaningful regions is considered. A probabilistic semantic basis is effectively integrated with the segmentation process, providing various decision criteria. Learning facilities are provided for interactively generating the Bayesian probabilistic basis. A programming system which is based on these ideas and its successful application to two problem domains are described. (Author)

AD-767 701/6GA PC$3.50/MF$1.45
Texas A and M Univ College Station Inst of Statistics
THE ITERATIVE ALGORITHM FOR SOLVING A 'TRANSPORTATION PROBLEM INVOLVING SOURCE-LOCATION OPTIMIZATION'.
Themis optimization research program,
Robert L. Sielken, Jr. Sep 73, 53p Rept no. THEMIS-TR-44
Contract N00014-68-A-0140

Descriptors: (*Programming(Computers), Algorithms), Computer programs, Iterative methods, Optimization, Mathematical programming.
Identifiers: Themis project, Transportation models, FORTRAN.

The report is a documentation of a computer program implementing the iterative algorithm described in Technical Report No. 42, A Transportation Problem Involving Source-Location Optimization. The general source-location problem under consideration is how to supply J destinations with D sub 1, D sub 2, ..., (D sub J) units from K possible sources at a minimum cost when the K sources have capacities B sub 1, B sub 2, ..., B sub K, and any subset of the K sources can be located at any one of I locations. A minimal cost solution involves the specification of each source's location and the allocation of the demands D sub 1, D sub 2, ..., D sub J among the sources. The theoretical characteristics and practical performance of the iterative algorithm make the algorithm an attractive method for determining near optimal solutions to such source-location problems. (Author)

AD-767 715/6GA PC$5.00/MF$1.45
Maryland Univ College Park Computer Science Center
DIGITAL PICTURE PROCESSING: A GUIDE TO THE LITERATURE.
Technical rept.,
Azriel Rosenfeld, and Avinash C. Kak. Sep 73, 60p
Contract N00014-67-A-0239-0012
Prepared in cooperation with Purdue Univ., Ind. School of Electrical Engineering.

Descriptors: (*Data processing systems, Images), (*Pattern recognition, Data processing systems), Reviews.
Identifiers: Digital pictures, Image processing, Image enhancement.

The report consists of several parts of a forthcoming book on Digital Picture Processing, dealing with pictures and their computer representation, image enhancement, and picture matching. (Author)

AD-767 741/2GA Reprint
Hawaii Univ Honolulu Dept of Physics and Astronomy
MULTICLASS SUBSPACE METHODS IN PATTERN RECOGNITION,
Casimir A. Kulikowski, and Satosi Watanabe. 1 Dec 70, 6p AFOSR-TR-73-1714
Grant AF-AFOSR-1466-68
Availability: Pub. in the Proceedings of the National Electronics Conference, v26 p468-470, 1 Dec 70.

Descriptors: (*Pattern recognition, Classification), Vector spaces, Transformations(Mathematics), Decision theory.

In the method of Class Featuring Information (CLAFIC) a class is represented by a subspace, and a procedure was developed to determine this subspace from a set of paradigms (representative samples) of the class. The vector components lying in the subspace are characteristic features in the sense that they account for most of the mean square variation of the class. The present paper proposes several methods to derive a set of discriminating features for each class from the original subspace representations. The basic idea lies in retrenching the subspaces to include only those principal components of a given class that are not representative of any other class. (Author)

AD-767 743/8GA Reprint
Hawaii Univ Honolulu Dept of Physics and Astronomy
AUTOMATIC FEATURE EXTRACTION IN PATTERN RECOGNITION,
Satosi Watanabe. 1969, 8p AFOSR-TR-73-1716
Grant AF-AFOSR-1466-68
Availability: Pub. in the Automatic Interpretation and Classification of Images, New York, 1969, p131-136.

Descriptors: (*Pattern recognition, Data processing systems), Decision making, Functions.
Identifiers: *Feature extraction.

The paper discusses the optimal coordinate system, SELFIC(Self Featuring Information Compression), and CLAFIC(Class Featuring Information Compression).

AD-767 744/6GA Reprint
Hawaii Univ Honolulu Dept of Physics and Astronomy
PATTERN RECOGNITION AS INFORMATION COMPRESSION,
Satosi Watanabe. 1972, 9p AFOSR-TR-73-1715
Grant AF-AFOSR-1466-68
Availability: Pub. in the Frontiers of Pattern Recognition, New York, 1972, p561-567.

Descriptors: (*Pattern recognition, Classification), Information theory, Mathematical logic.

Pattern recognition is considered as a case of information compression. This aspect of pattern recognition is characterized by the following facts: (1) the larger the information compression in one stroke, the better it is, but the larger the information compression, the more difficult the task; (2) if the information compression is to be made in steps, it is desirable that the burden of information compression be distributed more or less evenly over different steps. Both the vectorial approach and the grammatical approach are examined. (Author)

AD-767 759/4GA Reprint
Northwestern Univ Evanston Ill Dept of Electrical Engineering
ON A GRAPH MODEL OF DIAGNOSABLE SYSTEMS,
S. L. Hakimi, S. N. Maheshwari, and A. T. Amin. 1973, 5p AFOSR-TR-73-1851
Grant AF-AFOSR-2103-71
Prepared in cooperation with Illinois Univ., Chicago.
Availability: Pub. in Proceedings of the Pittsburgh Conference on Modeling and Simulation (4th), Pittsburgh, Pa., Apr 73.

Descriptors: (*Digital computers, *Reliability(Electronics)), (*Graphics, Theorems), Set theory, Mathematical programming, Systems engineering.
Identifiers: *Fault detection, *Graph theory.

Preparata, Metze and Chien gave necessary conditions for identification of all faulty units in a system S provided the number of faulty units does not exceed t. Hakimi and Amin showed that these conditions are sufficient conditions for the case when no such restrictions are placed on S. In the paper, least cost design of systems capable of identifying all faulty units, provided the number of faulty units does not exceed t, is considered. An approach for identifying faulty units is given. The problem of identifying a single faulty unit is treated. Fault identification on probabilistic basis is investigated. (Author)

AD-767 810/5GA PC$3.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
THE SACLANTCEN SHIPBORNE COMPUTER ENVIRONMENTAL-DATA ACQUISITION SYSTEM. VOLUME 5. SCRAPS -- A COMPUTERIZED REAL-TIME ACQUISITION AND PROCESSING SYSTEM FOR HEWLETT PACKARD 2116B COMPUTERS.
Memorandum rept.,
Eeuwood Goudriaan. 15 Aug 73, 82p Rept no. SACLANTCEN-SM-19
See also Volume 2, AD-760 186. NATO furnished.

Descriptors: (*Data processing systems, Shipborne), (*Oceanographic data, Data processing systems), Real time, Computer programs, Instruction manuals, Italy.
Identifiers: Data acquisition, SCRAPS system, HP 2116B computers, FORTRAN 2 programming language, FORTRAN 4 programming language, FORTRAN, Assembly languages, On line systems.

An automatic environmental data-logging and computing system installed on board SACLANTCEN's research vessel is described in a series of memoranda. This memorandum of the series concerns the specifications and operations of a software package that controls the low-speed sampling and storage of slowly-varying electrical analogue signals via an analogue-to-digital converter. It has been designed for Hewlett Packard 2116B minicomputers but may easily be modified for use on most general-purpose digital computers. Appendices provide specific instructions for the system's use with the 'WAVERIDER' buoy, with data input devices that do not use analogue-to-digital converters, and with personally-written software for real-time on-line data processing. (Author)

AD-767 918/6GA PC$2.75/MF$1.45
Naval Research Lab Washington D C
A FORTRAN PROGRAM TO COPY NINE TRACK TAPE.
Final rept.,
Mary Ellen Mosko. Sep 73, 19p Rept nos. NRL-MR-2649, NRL-Computer Bull-35

Descriptors: (*Computer programs, Instruction manuals), Algorithms, Magnetic tape, Recording systems.
Identifiers: CDC 3800 computers, Utility routines, COPYNINE computer program, FORTRAN.

A Fortran program has been written for the CDC 3800 computer to allow specified records and files to be copied from one nine track tape to another nine track tape. (Author)

AD-768 010/1GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
COMPUTERS AND INFORMATION FLOW,
R. L. Patrick. May 73, 18p Rept no. P-2791-2
See also report dated Mar 68, AD-668 417.

Descriptors: (*Data processing systems, Reviews), Digital computers, Analog computers, Special purpose computers, Input-output devices, Data storage systems, Programming(Computers), Cost effectiveness.

The paper is aimed at the person who has no knowledge whatsoever of the computing and data processing field, but who has, or can expect to have, some connection with it. The lecture's purpose is to provide a general introduction to the field, to pin down its unique terminology and jargon, to identify the various types of computers and the scope of computational capabilities, and to provide some rules of thumb which can be applied in determining whether a need for such a capability exists or not.

AD-768 023/4GA PC$3.00/MF$1.45
Defense Nuclear Agency Washington D C
GENERALIZED INFORMATION RETRIEVAL LANGUAGE (GIRL): USER'S GUIDE,
John Long. Sep 73, 26p*
See also report dated Sep 73, AD-768 024.

Descriptors: (*Programming languages, Instruction manuals), (*Programming(Computers), Information retrieval), Data processing systems.
Identifiers: GIRL programming language, Data management systems, COBOL, Programming manuals, Burroughs 2500 computers, Burroughs 3500 computers.

The Generalized Information Retrieval Language permits the non-computer-oriented person to access, select, sort, print and summarize records that are established on tape, cards, or disk. This means that a trained user can define and structure the report that will best serve his needs. The user can code the English language statements that will specify the information desired on a particular report. (Author)

AD-768 024/2GA PC$175.00/deck
Defense Nuclear Agency Washington D C
GENERALIZED INFORMATION RETRIEVAL LANGUAGE (GIRL): COMPUTER PROGRAM (CARD DECK),
John Long. Sep 73, 2046p*
Available to non-U.S. addresses $219.00/deck. See also report dated Sep 73, AD-768 023.

Descriptors: (*Programming(Computers), Information retrieval), Punched cards.
Identifiers: GIRL programming language, Data management systems, COBOL, Burroughs 2500 computers, Burroughs 3500 computers.

Included are 2046 cards for the Generalized Information Retrieval Language to permit the non-computer-oriented person to access, select, sort, print and summarize records that are established on tape, cards, or disk. (Modified author abstract)

AD-768 041/6GA PC$2.75/MF$1.45
Royal Radar Establishment Malvern (England)
AN IMPLEMENTATION OF FOSTER'S SYNTAX IMPROVING DEVICE FOR THE ICL 4100 COMPUTER.
Technical note,
J. T. Webb. Mar 73, 24p Rept no. RRE-TN-774

Descriptors: (*Programming(Computers), Syntax), Semantics, Transformations, Mathematical logic, Great Britain.
Identifiers: ICL 4100 computers, ALGOL, ALGOL 60 programming language, Boolean algebra.

The paper describes an implementation of Foster's 'Syntax Improving Device' for the ICL 4100 computer. The program, called SEMSID, is written in Algol with NEAT code-segments. The program accepts as input a definition of the Syntax specifying the grammer for the input to the required object program and outputs either a complete Algol block, or a set of macros calls, or the data set required by an interpretive Syntax Analyser. SEMID will accept semantic actions and rules in the Syntax, and also provides for comprehensive failure handling in the object program. (Modified author abstract)

AD-768 076/2GA PC$2.75/MF$1.45
Rand Corp Santa Monica Calif
AN INTERACTIVE COMPUTER GRAPHICS SYSTEM FOR SIMULATING DYNAMIC SYSTEMS,
Gabriel F. Groner, and R. Lawrence Clark. Mar 73, 18p Rept no. P-4985

Descriptors: (*Data processing systems, Graphics), Simulation, Man-machine systems, Reviews, Air traffic control systems, Airports, Queueing theory.
Identifiers: Interactive computer graphics, BIOMOD system, Scenarios, Computer graphics.

BIOMOD is an operational system designed to enable investigators to study models of dynamic systems. The paper presents a scenario describing the construction and simulation of a model of long delays at airports. BIOMOD employs a graphics console comprising a television screen, a data tablet, and a keyboard. A user constructs a model by drawing block diagrams and handprinting or typing text while receiving immediate feedback about the interpretation of his actions. (Modified author abstract)

AD-768 092/9GA PC$4.25/MF$1.45
Harry Diamond Labs Washington D C
FORTRAN IV COMPILER FOR THE WANG 520 CALCULATOR,
Howard M. Bloom, and Arthur Hausner. Jul 73, 115p* Rept no. HDL-TM-73-15

Descriptors: (*Compilers, Instruction manuals), Syntax, Control sequences, Algorithms.
Identifiers: Wang 520 programmable calculators, *Calculators, FORTRAN 4 programming language, FORTRAN.

The paper describes the first phase of a project designed to generate Wang 520 desk calculator machine code from programs written in a specific subset of FORTRAN IV. Algorithms are given to show how the translation is performed. Many examples are given to illustrate how the system is used. At the present time, the compiler (written in SUPERFORTRAN) is only available on the Tymshare, Inc. network (System 15). (Author)

AD-768 150/5GA PC$9.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
A PRODUCTION SYSTEM STUDY OF DATA PROCESSING CENTERS,
Robert Joseph Chouinard. Jul 71, 154p Rept no. USAMC-ITC-2-71-26

Descriptors: (*Data processing systems, Efficiency), Systems engineering, Computer programs, Scheduling, Statistical analysis, Theses.
Identifiers: Computation.

A data processing center so common and necessary as a subsystem in an overall large organization today is often overlooked as a production system and as a result many data processing systems may be operating inefficiently. The paper studies the data processing center as a production system and proposes several descriptive statistics that may be used in a monthly analysis of the computing system. In the study two new terms are introduced concerning turnaround which form the basis of the systems effectiveness study. In addition some equations are presented for the measurement of systems effectiveness which may be used for the entire system or with respect to any of the subsets within the system. (Author)

AD-768 304/8GA PC$5.50/MF$1.45
Naval Ship Research and Development Center Bethesda Md
ADP DATA SECURITY AND PRIVACY: PROCEEDINGS OF THE CONFERENCE ON SECURE DATA SHARING HELD AT NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER, ON 26-28 SEPTEMBER 1972.
Aug 73, 226p* Rept no. NSRDC-4130
Sponsored in part by Office of Naval Research, Arlington, Va.

Descriptors: (*Data processing systems, Protection), Symposia, Data transmission systems, Secret communication systems, Networks, Multiple operation, Time sharing, Information retrieval, Vulnerability, Programming(Computers), Coding.
Identifiers: *Computer information security, *Computer privacy, Information systems, Computer networks, Secure communication, Management information systems, Document security, Multics system, Computer program verification.

Papers presented at the Naval Ship Research and Development Center conference by leading researchers regarding problems of secure data sharing in ADP systems are collected in these proceedings. Topics covered include: Computer security: problem dimension and solution space; protection mechanisms in Multics; the application of program verification techniques to security; logical access control mechanisms in computer systems; computer security research and development requirements; data security research at the Rand Corporation; problems and considerations of computer security; data security developments at IBM; socially responsible information systems; electronic data systems security; an experiment in data security. (Modified author abstract)

AD-768 346/9GA PC$12.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
AN AUTOMATED DIGITAL DESIGN LANGUAGE FOR CLODS(COMPUTERIZED LOGIC-ORIENTED DESIGN SYSTEM).
Master's thesis,
Thomas J. Brown. Jun 73, 198p Rept no. GE/EE/73S-1

Descriptors: (*Programming languages, Design), (*Logic circuits, Design), Digital computers, Programming(Computers), Control sequences, Semantics, Syntax, Theses.
Identifiers: CLODS(Computerized Logic Oriented Design System), Computerized logic oriented design system, DDL programming language, *Logic design, Computer aided design, Simulation languages.

Many aspects of digital design have been computerized in the past. Symbolic design, state reduction, state assignment, logic realization and simulation are a few of these individual processes. The computerized Logic-Oriented Design System (CLODS) is an attempt to consolidate previous individual efforts into an integrated digital design system. The thesis is a study of several symbolic design languages currently available which could be used in the symbolic design phase of an automated design system. One language, the Digital Design Language (DDL), is chosen as the most desirable in terms of conciseness, readability, and flexibility. A translation program, which converts a DDL description into Boolean equations and state tables, is implemented in the FORTRAN language using a previously written program as the basis. The method of translation and the actual programs are discussed in detail. (Modified author abstract)

AD-768 347/7GA PC$7.50/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
SPACE OBJECT IDENTIFICATION BY FILTERED FOURIER TRANSFORM PATTERN RECOGNITION ALGORITHM.
Master's thesis,
William L. Malinski. Jun 73, 107p Rept no. GE/EE/73S-4

Descriptors: (*Pattern recognition, Optical tracking), (*Optical tracking, Spectrum signatures), (*Satellite tracking systems, Target discrimination), Identification systems, Rockets, Data processing systems, Algorithms, Curve fitting, Graphics, Fourier analysis, Theses.
Identifiers: Signal processing, Fourier transformation, Feature selection.

Light intensity signals reflected from three classes of orbiting rocket bodies were analyzed using one-dimensional Fourier transforms. Low-frequency filtering in the transform domain and the Euclidean distance metric were used to classify the signals into the three classes. Using a portion of the data, linear decision boundaries were constructed by an adaptive training algorithm. It was found that the low-frequency filtered one-dimensional Fourier-transform domain gave good separation of the three classes of rocket bodies analyzed. A method of automated space object identification is proposed for non-stabilized satellites. It is suggested that the algorithm used in the study is also applicable to data collected via radar. (Author)

AD-768 349/3GA PC$10.25/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
COMPUTERIZED LOGIC-ORIENTED DESIGN SYSTEM.
Master's thesis,
Michael John Svisco. Jun 73, 164p Rept no. GE/EE/73S-6

Descriptors: (*Programming(Computers), Instruction manuals), (*Digital computers, Design), (*Logic circuits, Design), Computer programs, Programming languages, Theses.
Identifiers: CLODS(Computerized Logic Oriented Design System), Computerized logic oriented design system, CLODS computer program, CDC 6600 computers, *Logic design, Computer aided design.

The Computerized Logic-Oriented Design System (CLODS) is a computer program written for the CDC 6600 computer located at Wright-Patterson Air Force Base. The program is intended as an educational tool and as a design aid for the students of the Air Force Institute of Technology. All of the various steps in the digital design process are covered by CLODS and these steps can be accessed either serially or individually. The major programs used by CLODS are: (1) a higher-order language (DDL) (2) a state reduction program; (3) state assignment programs; (4) a logic-hardware realization algorithm (GELAS); (5) a logic circuit drawing program; and (6) a digital logic simulator (DLS). CLODS essentially controls the execution of the above-mentioned programs. (Modified author abstract)

AECD/COM-1/GA PC$4.25/MF$1.45
Atomic Energy Centre, Dacca (Pakistan).
FUNCTIONAL MODELS FOR COMPUTER DESIGN.
M. S. Khan. Jan 73, 45p
U.S. Sales Only.

Descriptors: (*Computers, *Functional models), Cartesian coordinates, Equations, Mathematical models, Planning, Vectors.

For abstract, see NSA 28 04, number 10493.

ANCR-1116/GA PC$4.00/MF$1.45
Aerojet Nuclear CO., Idaho Falls, Idaho.
PERFORMANCE MEASUREMENTS ON THE NRTS IBM 360/75 COMPUTER SYSTEM.
B. M. Beardsley. May 73, 16p
Contract AT(10-1)-1375

Descriptors: (*Ibm computers, *Performance), (*Nrts, Ibm computers).

For abstract, see NSA 28 05, number 12485.

ANL-7988/GA PC$5.45/MF$1.45
Argonne National Lab., Ill.
AMP, A DYNAMIC MICROPROCESSOR.
R. Barr, J. Becker, W. Lidinsky, and V. Tantillo. Jun 73, 67p
Contract W-31-109-eng-38

Descriptors: (*Computers, *Planning), (*Control systems, Computers), Programming.

For abstract, see NSA 28 06, number 15044.

CEA-R-4397/GA PC$7.50/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
RESEARCH INTO THE OPTIMAL UTILIZATION OF MAGNETIC MATERIALS IN PLATED WIRE MEMORIES.
H. Serindat. 1973, 110p
In French. U.S. Sales Only.

Descriptors: (*Memory devices, *Wires), Magnetic materials.

For abstract, see NSA 28 06, number 15045.

COM-73-11319/3GA $10.00/deck
National Bureau of Standards, Washington, D.C. Office of Information Processing Standards.
STANDARD METROPOLITAN STATISTICAL AREAS.
Final rept.,
Hazel E. McEwen. 15 Aug 73, 267 cards FIPS-PUB-8-3-C
Supersedes Report no. FIPS-PUB-8-2-C, COM-72-11395. See also COM-73-50685.
Punched cards $10.00/deck of 267 cards.

Descriptors: (*National government, Data processing), (*Hollerith code, Urban areas), (*Data processing, *Standards), (*Urban areas, Statistical data), Urban geography, Populations, Coding, Punched cards.
Identifiers: *Federal information processing standards, *Standard metropolitan statistical areas.

The standard codes for representing the Standard Metropolitan Statistical Areas (commonly referred to as SMSA's) are for use in the interchange of data among data systems. The four digit codes are provided by the Office of Management and Budget. SMSA's are used primarily in statistical systems to record data relating to recognized metropolitan areas having an integrated economic and social unit with a large population nucleus. The codes are available on Hollerith punched cards. The following data elements are provided: SMSA Title (Name) and SMSA Code. Use of the cards is described in NBS-FIPS-PUB-8-3.

COM-73-50685/9GA PC-GPO/MF$1.45-NTIS
National Bureau of Standards, Washington, D.C. Office of Information Processing Standards.
STANDARD METROPOLITAN STATISTICAL AREAS. FEDERAL GENERAL DATA STANDARD REPRESENTATIONS AND CODES.
Federal information processing standards,
Hazel E. McEwen. 15 Aug 73, 23p FIPS-PUB-8-3
Supersedes Rept. no. FIPS-PUB-8-2 dated 1 Nov 72, COM-72-50996. See also COM-73-11319.
Paper copy available from GPO $0.55 as C13.52:8-3.

Descriptors: (*National government, Data processing), (*Hollerith code, Urban areas), (*Data processing, *Standards), (*Urban areas, Statistical data), Population, Coding, Standardization.
Identifiers: *Federal information processing standards, *Standard metropolitan statistical areas.

The publication provides standard identifications and codes for representing Standard Metropolitan Statistical Areas for the interchange of machine sensible data among agencies. It supersedes FIPS PUB 8-2, Standard Metropolitan Statistical Areas, dated 1972 November 1. The general concept of a Standard Metropolitan Statistical Area, commonly referred to as 'SMSA' is one of an integrated economic and social unit with a recognized large population nucleus. The codes are available on Hollerith punched cards. The following data elements are provided: SMSA Title (Name) and SMSA Code.

COM-73-50829/3GA PC-GPO/MF$1.45-NTIS
National Bureau of Standards, Washington, D.C. Office of Information Processing Standards.
COUNTIES AND COUNTY EQUIVALENTS OF THE STATES OF THE UNITED STATES. FEDERAL GENERAL DATA STANDARD REPRESENTATIONS AND CODES.
Federal information processing standards,
Hazel E. McEwen. 15 Sep 73, 37p FIPS-PUB-6-2
Supersedes report dated 15 Jun 70, FIPS-PUB-6-1.
Paper copy available from GPO $0.65 as C52.13:6-2.

Descriptors: (*National government, Data processing), (*Hollerith code, Geography), (*Data processing, Standards), Political science, Statistical data, Coding, Standardization.
Identifiers: *Federal information processing standards.

The publication provides names and codes for representing the Counties of the 50 States or county equivalents thereof for use in the interchange of formatted machine sensible data. Also included in the set of codes are the independent cities of Maryland, Missouri, Nevada, and Virginia and the Census Divisions and boroughs of Alaska.

COM-73-50833/5GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Boulder, Colo. Atmospheric Physics and Chemistry Lab.
MINIMAX--A FORTRAN COMPUTER PROGRAM TO ASSEMBLE THE MACHINE CODE FOR THE INTERDATA MODEL 70 MINICOMPUTER ON THE CONTROL-DATA 3800.
Technical rept.,
Heinz H. Grote. Apr 73, 121p NOAA-TR-ERL-269, APCL-28 NOAA-73080803
Paper copy available from GPO $1.85 as C55:13:ERL269-APCL28.

Descriptors: (*Machine coding, *Computer programs), FORTRAN, Programming manuals.
Identifiers: MINIMAX computer program, CDC 3800 computers.

The paper describes a program written in FORTRAN 5.4 I that is prepared for the NOAA CDC 3800 computer facility in Boulder, Colorado, and that provides a printed output of location and machine code for the Interdata Model 70 minicomputer and the original data contained on the input card including comments.

CONF-711010/GA PC$7.60/MF$1.45
National Bureau of Standards, Washington, D. C.
INTERACTIVE BIBLIOGRAPHIC SYSTEMS. PROCEEDINGS OF A FORUM HELD AT GAITHERSBURG, MARYLAND, OCTOBER 4--5, 1971. AEC SYMPOSIUM SERIES 28.
M. B. Henderson. Apr 73, 211p

Descriptors: (*Information retrieval, *Interactive display devices), (*Information systems, Interactive display devices), Computers.

For abstract, see NSA 28 04, number 10483.

COO-1469-223/GA PC$4.00/MF$1.45
Illinois Univ., Urbana. Dept. Of Computer Science.
RATION: A RATIONAL ARITHMETIC PACKAGE.
R. L. Brown. Jun 73, 40p UIUCDCS-R-73-572
Contract AT(11-1)-1469

Descriptors: (*Computer codes, *R codes), Algorithms, Fortran, Manuals, Mathematics.

For abstract, see NSA 28 06, number 15047.

EURFNR-1079/GA PC$14.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Reaktorentwicklung.
SEDAP: AN INTEGRATED SYSTEM FOR EXPERIMENTAL DATA PROCESSING.
M. Audoux, F. W. Katz, W. Olbrich, and E. G. Schlechtendahl. Jan 73, 250p KFK-1594, EUR-4730
U.S. Sales Only.

Descriptors: (*Computer codes, *S codes), (*Data processing, S codes), Fortran, Ibm computers.

For abstract, see NSA 28 04, number 08289.

HMI-B-132/GA PC$4.50/MF$1.45
Hahn-Meitner-Institut fuer Kernforschung, Berlin (West Germany).
PROGRAMMING OF A CAMAC BRANCH CONTROLLER FOR AUTONOMOUS INFORMATION TRANSFER WITH AN ON-LINE COMPUTER S 301.
M. Bischoff, and H. Pangritz. Feb 73, 48p
In German. U.S. Sales Only.

Descriptors: (*Camac system, *Programming languages), Computers, Data processing.

For abstract, see NSA 28 04, number 10496.

IS-3041/GA PC$4.75/MF$1.45
Ames Lab., Iowa.
TASKMASTER OPERATOR'S GUIDE.
J. H. Campbell, and B. Helland. Jan 73, 52p
Contract W-7405-eng-92

Descriptors: Interactive display devices, Manuals, Operation, Real time systems.

For abstract, see NSA 28 05, number 12486.

IS-3042/GA PC$5.50/MF$1.45
Ames Lab., Iowa.
GUIDE TO THE TASKMASTER REAL-TIME MULTITASKING CONTROL SYSTEM.
J. H. Campbell, and B. Helland. Dec 72, 69p
Contract W-7405-eng-82

Descriptors: (*Real time systems, *Programming languages), Control systems, Manuals, Operation.

For abstract, see NSA 28 05, number 12487.

JUL-908-MA/GA PC$5.25/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Zentralinstitut fuer Angewandte Mathematik.
STRIP: A MODIFIED TRAC IMPLEMENTATION FOR THE PDP-8/1.
H. Ketzer. Dec 72, 65p
U.S. Sales Only.

Descriptors: (*Programming languages, *Pdp computers).

For abstract, see NSA 28 06, number 15048.

K-GD-808/GA PC$3.00/MF$1.45
Oak Ridge Gaseous Diffusion Plant, Tenn.
FAST FOURIER TRANSFORM FOR THE MODCOMP COMPUTER.
D. I. Dunthorn. 5 Jun 73, 15p
Contract W-7405-eng-26

Descriptors: (*Fourier transformation, *Computer calculations), Cathode ray tubes, Computers, Programming, Real time systems.

For abstract, see NSA 28 06, number 15049.

KFK-EXT-13/72-3/GA PC$4.00/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Datenverarbeitung in der Technik.
PROGRAM DESCRIPTION OF A PL/1-SUBROUTINE PACKAGE FOR DISCRETE EVENT SIMULATION.
D. Hilse, M. Rupp, and J. Nehmer. Jan 73, 39p
In German. U.S. Sales Only.

Descriptors: (*Computer codes, *Pl-1 language), Ibm computers.

For abstract, see NSA 28 04, number 10501.

KFK-EXT-8/72-4/GA PC$5.00/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Reaktorentwicklung.
REGENT SECOND SEMIANNUAL PROGRESS REPORT, APRIL 1972--SEPTEMBER 1972.
G. Enderle, K. Leinemann, E. G. Schlechtendahl, H. Schnauder, and U. Schumann. Dec 72, 59p
In German. U.S. Sales Only.

Descriptors: (*Computers, *Data processing), (*Information systems, *Research programs), Geometry.

For abstract, see NSA 28 04, number 10498.

KFK-EXT-8/72-6/GA PC$7.25/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Reaktorentwicklung.
KOSPRA: PROPOSAL OF A DESIGN LANGUAGE FOR GEOMETRICAL DESCRIPTION OF TECHNICAL OBJECTS.
K. Leinemann, and U. Schumann. Feb 73, 104p
In German. U.S. Sales Only.

Descriptors: (*Programming languages, *Planning), Computers, Configuration, Geometry.

For abstract, see NSA 28 04, number 10499.

KFK-EXT-8/72-7/GA PC$3.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Reaktorentwicklung.
CAPABILITIES AND IMPLEMENTATION OF THE GRAPHIC LANGUAGE.
G. Enderle, K. Leinemann, E. G. Schlechtendahl, H. Schnauder, and U. Schumann. Dec 72, 26p
In German. U.S. Sales Only.

Descriptors: (*Programming languages, *Graphic), Computer codes, Geometry.

For abstract, see NSA 28 04, number 10500.

KFK-PDV-1/GA PC$12.25/MF$1.45
Gesellschaft fuer Kernforschung M.B.H., Karlsruhe (West Germany).
PEARL: A PROPOSAL FOR A PROCESS AND EXPERIMENT AUTOMATION REALTIME LANGUAGE.
K. H. Timmesfeld, B. Schuerlein, and P. Rieder. Apr 73, 203p
In German. U.S. Sales Only.

Descriptors: (*Programming languages, *Real time systems), Algorithms.

For abstract, see NSA 28 06, number 15050.

LA-UR-73-565/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
COMPUTER PROGRAM OPTIMIZATION USING SOFTWARE MONITORING TECHNIQUES.
A. F. McGirt, L. E. Rudsinski, and K. J. Melendez. 1972, 8p CONF-730501-1
Contract W-7405-eng-36

Descriptors: (*Computers, *Performance), (*Programming, *Optimization), Cost, Efficiency, Lasl, Measuring instruments, Monitoring.

For abstract, see NSA 28 06, number 15051.

LA-UR-73-890/GA PC$3.25/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ALGORITHMIC LANGUAGES AND MACHINE-ORIENTED TASKS.
M. B. Wells. 1973, 23p
Contract W-7405-eng-36

Descriptors: (*Programming languages, *Algorithms), Computers.

For abstract, see NSA 28 06, number 15052.

N73-29111/4GA PC$7.25/MF$1.45
Electrotechnical Lab., Tokyo (Japan).
A SURVEY OF PARALLEL PROCESSING AND PARALLEL PROCESSOR SYSTEMS.
Y. Kaneda. Feb 73, 105p CIRC-174
In Japanese; English Summary.

Descriptors: *Parallel processing (Computers), *Systems analysis, Algorithms, Computer programs, Multiprocessing (Computers), Parallel computers, Programming languages.

For abstract, see STAR 1120

N73-29112/2GA PC$3.00/MF$1.45
Japan Broadcasting Corp., Tokyo.
A THIN MAGNETIC FILM SHIFT REGISTER.
Y. Ooba, O. Fukuoka, and E. Miyamoto. Apr 73, 8p NHK-LABS-NOTE-164

Descriptors: *Magnetic films, *Shift registers, *Thin films, Data processing, Magnetic domains, Permalloys (Trademark), Systems engineering.

For abstract, see STAR 1120

N73-29113/0GA PC$11.25/MF$1.45
Australian National Univ., Canberra. Dept. of Engineering Physics.
COLLECTION, STORAGE AND RETRIEVAL OF DATA BY COMPUTER AT THE HIGH FIELD MAGNET LABORATORY, CANBERRA.
R. G. Sutton, and R. L. Mcmurtrie. Oct 72, 183p
EP-RR-28

Descriptors: *Data acquisition, *Data retrieval, *Data storage, Computer programs, Data processing, Ibm 360 computer, Research facilities.

For abstract, see STAR 1120

N73-29114/8GA PC$3.00/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany).
CAMAC INPUT/OUTPUT MODULES FOR BINARY SIGNALS.
W. Heep, G. Hellmann, and W. Stiefel. Jan 73, 20p KFK-1688
Language in German.

Descriptors: *Binary data, *Electronic modules, *Input/output routines, Computer programming, Signal processing.

For abstract, see STAR 1120

N73-29566/9GA PC$10.25/MF$1.45
Houston Univ., Tex. Dept. of Mathematics.
STATISTICAL STUDIES OF PATTERN CLASSIFICATION AND RECOGNITION, VOLUME 1.
Final Report, 1 May 1972 - 30 Apr. 1973.
30 Apr 73, 164p NASA-CR-128989
Contract NAS9-12777

Descriptors: *Pattern recognition, *Statistical analysis, Algorithms, Computer programs, Divergence, Extremum values, Linear programming, Matrices (Mathematics), Probability theory, Regression analysis, Set theory.

For abstract, see STAR 1120

N73-29598/2GA PC$4.50/MF$1.45
Cambridge Univ. (England). Dept. of Engineering.
A NEW APPROACH TO FEATURE SELECTION BASED ON THE KARHUNEN-LOEVE EXPANSION.
J. Kittler, and P. C. Young. 1972, 49p TR-29

Descriptors: *Karhunen-loeve expansion, *Pattern recognition, Classifications, Data management, Matrices (Mathematics), Measure and integration, Signal to noise ratios, Stochastic processes.

For abstract, see STAR 1120

PATENT-3 715 574/GA Not available NTIS
Department of the Navy Washington D C
INTERFACE CONVERTER FOR FEEDING HIGH FREQUENCY SIGNALS INTO LOW FREQUENCY CIRCUITS.
Patent,
Richard L. Gowan. Filed 21 Jul 71, patented 6 Feb 73, 4p Rept nos. PAT-APPL-164 564,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Digital-to-analog converters, *Patents), Interfaces, Comparators, Digital systems.
Identifiers: PAT-CL-235-154.

The patent describes apparatus for conversion of high speed binary to binary coded decimal with low speed circuitry. An information incoming pulse is digitized at the high frequency rate and this digital equivalent is stored in a first bit register. A low frequency digitizing oscillator is coupled through a gate circuit to a bit register identical to the first bit register and into a binary-to-digital converter. A bit by bit comparator compares the high frequency pulse count with the low frequency pulse count and produces a stop signal to the gate circuit when the low frequency count equals the stored high frequency count.

PB-223 881/4GA PC$8.50/MF$1.45
Cornell Univ., Ithaca, N.Y. Dept. of Computer Science.
COMPUTATIONAL COMPLEXITY AND NONDETERMINISM IN FLOWCHART PROGRAMS.
Technical rept.,
Theodore Paul Baker. Sep 73, 130p CU-CSD-73-185
Grant NSF-GJ-3317

Descriptors: (*Computer programming, Mathematical logic), Computation, Recursive functions, Graph theory, Turing machines, Theorems, Theses.
Identifiers: Computational complexity.

The thesis is an effort to contribute to the theory of computation by investigation of a special class of complexity measures, the step-counting functions associated with flowchart programs.

PB-224 098/4GA PC$3.75/MF$1.45
Maryland Univ., College Park. Computer Science Center.
CONCEPTUAL DESIGN OF A DIRECT HIGH-LEVEL LANGUAGE PROCESSOR.
Technical rept.,
Howard M. Bloom. Apr 73, 96p* TR-239
Grant NSF-GJ-33013

Descriptors: (*Programming languages, Design criteria), Compilers, ALGOL, Syntax, Semantics, Boolean algebra, Block design, Algorithms.
Identifiers: ALGOL 60 programming language, Language processors, Direct high level language processors.

The paper describes the conceptual design of a direct-high-level language processor (DHLLP) that accepts ALGOL 60 as its input language. The basic concept of the DHLLP is explained and the method of executing a program is described by giving a brief description of the syntax checking and execution algorithm. The method for executing the language semantics and the data structures needed is presented through a series of examples. The programs are stepped through to show the dynamic nature of the processor. Becuase this is a conceptual design, the description is given without reference to either a software or hardware implementation. (Author)

RISO-M-1594/GA PC$3.50/MF$1.45
Danish Atomic Energy Commission, Risoe. Research Establishment.
RISOE HYBRID COMPUTER EAI 680-PDP8/I,FPP12.
K. Soee Hoejberg. May 73, 26p
U.S. Sales Only.

Descriptors: (*Computers, *Planning), (*Data processing, Computers), Analog computers, Magnetic disks, Pdp computers, Programming languages.

For abstract, see NSA 28 06, number 15055.

RT/EL-(73)1/GA PC$3.25/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy).
PDP-11 BASIC EXTENSION FOR CAMAC PROGRAMMING.
I. Bals, and E. De Agostino. 18 Jan 73, 21p
U.S. Sales Only.

Descriptors: (*Camac system, *Programming), (*Pdp computers, Programming), Computer codes, Programming languages.

For abstract, see NSA 28 06, number 15056.

RT/ING-(72)16/GA PC$4.50/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy). Divisione Affari Internazionali E Studi Economici.
DESRIPTION OF THE COMPUTER PROGRAMS OF FINITE ELEMENTS SAFE-3D IN THE IBM-360 VERSION.
G. Massini, A. Pepino, L. Serchia, and P. Zaccarelli. 20 Jul 72, 46p
In Italian. U.S. Sales Only.

Descriptors: (*Computer codes, *S codes), (*Composite materials, *Stresses), Finite element method, Three-dimensional calculations.

For abstract, see NSA 28 04, number 10506.

SLA-73-386/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
SAGS: STAND-ALONE GRAPHICS SOFTWARE FOR THE PDP-9/VECTOR GENERAL SYSTEM.
C. R. Borgman. May 73, 60p

Descriptors: (*Pdp computers, *Computer codes), Data display systems, Fortran, Programming languages.

For abstract, see NSA 28 04, number 10507.

SLA-73-5454/GA PC$3.25/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
SANDIA INTERACTIVE GRAPHICS SYSTEM: SIGS.
25p CONF-730526-1

Descriptors: Cdc computers, Fortran, Interactive display devices, Pdp computers, Reviews.

For abstract, see NSA 28 06, number 15059.

SLAC-161/GA PC$7.60/MF$1.45
Stanford Linear Accelerator Center, Calif.
COMPUTING WITH MULTIPLE MICROPROCESSORS.
J. V. Levy. Apr 73, 168p
Contract AT(04-3)-515

Descriptors: (*Computers, *Planning), (*Data processing, Computers), Cost, Economics.

For abstract, see NSA 28 06, number 15060.

UCID-15616(Rev.1)/GA PC$5.75/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
NEVADA AUTOMATED DIAGNOSTICS (NAD) SYSTEM.
R. Rufer. 3 Feb 70, 75p
Contract W-7405-eng-48

Descriptors: (*Data acquisition systems, *Design), (*Nevada test site, Data acquisition systems), (*Nuclear explosion detection, Data acquisition systems), (*Nuclear explosions, Data acquisition systems), Pdp computers.

For abstract, see NSA 28 06, number 12831.

UCID-16212/GA PC$7.75/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
XPL USER'S MANUAL.
C. Wetherell. 20 Feb 73, 111p
Contract W-7405-eng-48

Descriptors: (*Programming languages, *Manuals), Computers.

For abstract, see NSA 28 06, number 15062.

UCID-16281/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Radiation Lab.
ADAPTING A MINICOMPUTER PROGRAMMING SYSTEM TO THE INTEL MCS-4 AND MCS-8 MICROCOMPUTER SYSTEMS.
R. L. Peterson. 27 Jul 72, 19p

Descriptors: (*Computers, *Programming languages), Pdp computers, Programming.

For abstract, see NSA 28 05, number 12490.

UCID-30060/GA PC$3.50/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
BANDED LINEAR SYSTEMS WITH PIVOTING.
A. C. Hindmarsh. May 73, 27p
Contract W-7405-eng-48

Descriptors: (*Computer codes, *Matrices), Cdc computers, Equations, Numerical solution.

For abstract, see NSA 28 04, number 10508.

UCLA-10-P-14-121/GA PC$3.25/MF$1.45
California Univ., Los Angeles. Dept. Of Computer Science.
ANNUAL PROGRESS REPORT.
May 73, 21p
Contract AT(11-1)-Gen-10

Descriptors: (*Data processing, *Research programs), (*Computer calculations, *Functional models), Computers, Mathematical models.

For abstract, see NSA 28 06, number 15064.

UCRL-74761/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
FUTURE TRENDS IN COMPUTER HARDWARE.
E. A. Feustel, C. A. Jensen, and F. H. McMahon. 22 May 73, 9p CONF-730706-1

Descriptors: (*Computers, *Data processing), Computer codes, Monte carlo method, Programming, Programming languages.

For abstract, see NSA 28 06, number 15066.

Y-1882/GA PC$4.00/MF$1.45
Oak Ridge Y-12 Plant, Tenn. (Usa).
MAGNETIC CORE MEMORY FOR A NUMERICAL CONTROL SYSTEM.
T. L. Williams. 11 Jul 73, 38p
Contract W-7405-eng-26

Descriptors: (*Machine tools, Control systems), (*Control systems, *Memory devices), Computers, Failures, Magnetic cores.

For abstract, see NSA 28 06, number 15067.

9C. Electrical and Electronic Engineering

AD-768 199/2GA PC$4.75/MF$1.45
Westinghouse Electric Corp Lima Ohio Aerospace Electrical Div
AC POWER CONTROLLERS FOR SOLID STATE DISTRIBUTION SYSTEM. VOLUME I. DESIGN, DEVELOPMENT, FABRICATION, AND TEST OF HYBRID DEVICES.
Final rept. Jun 71-May 73,
James T. Mitchell, W. W. Billings, K. C. Shuey, and C. M. Gauthier. Sep 73, 162p Rept no. WAED-73.12 AFAPL-TR-73-75-Vol-1
Contract F33615-71-C-1900

Descriptors: (*Power equipment, Control systems), Aircraft equipment, Design, Alternating current, Logic circuits, Gates(Circuits), Silicon controlled rectifiers.

The report describes the work done in a program in which solid state power controllers were designed, developed, fabricated, and tested. Units rated 1.0 through 5.0 amperes, 230 volts, and 1.0 through 75 amperes, 115 volts, 400 Hz, were built using hybrid thick-film bare chip and wire techniques. Details of the test results, circuit designs, and recommendations are included as part of this report. (Author)

PB-224 005/9GA PC$4.75/MF$1.45
Massachusetts Inst. of Tech., Cambridge. Energy Lab.
ESTIMATION OF AGGREGATE MILES OF EHV TRANSMISSION LINE NEEDS.
Final rept.,
L. C. Markel. Aug 72, 163p* MIT-EL-73-011
Grant NSF-GI-32874

Descriptors: (*Electric power transmission, Regression analysis), Power transmission lines, High voltage, Length, Mathematical models, Predictions.

Regression analysis is used to develop models for the total number of miles of EHV line needed in a power system. The models developed are not meant to be used to design a transmission system, but to examine existing EHV systems to see if general patterns of relationships exist on a system-wide basis. Regional US data and projections of load and generation characteristics for the years 1960 to 1990 are used to develop regression models for circuit miles and gigawatt equivalent miles of EHV transmission line. F and t tests are used to determine the statistical significance of the model parameters. Methods of using the models to investigate the effect of new plant siting strategies or environmental constraints on EHV grid size are discussed.

SC-TM-720314/GA PC$4.25/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
MINIMIZING THE EFFECTS OF ELECTRICAL NOISE.
R. A. Adams. May 72, 40p

Descriptors: (*Electronic equipment, *Noise), Electric currents, Electric fields, Electrical testing, Electromagnetic fields, Electromagnetic radiation, Electrostatics, Magnetic fields, Measuring instruments.

For abstract, see NSA 28 04, number 10616.

9D. Information Theory

AD-767 714/9GA PC$3.00/MF$1.45
California Univ Irvine School of Engineering
NONLINEAR ANALYSIS OF ANGLE DEMODULATION,
Francis S. Nakamoto, and Neil J. Bershad. Sep 72, 46p
Contract N00014-69-A-0200-9004

Descriptors: (*Information theory, Demodulation), Phase modulation, White noise, Signal-to-noise ratio, Stochastic processes, Probability density functions, Errors, Nonlinear systems.
Identifiers: Nonlinear filtering, Signal processing, Markov processes, Fokker-Planck equations, Stochastic differential equations.

The angle-demodulation problem is investigated from the viewpoint of nonlinear filtering theory. The mean square error criterion and state-variable representation of Kushner's classical nonlinear approach are adopted. The relationship between the optimum nonlinear filter and certain decoupled implementations is shown. The decoupled implementations are subsequently analyzed and nonlinear effects such as thresholding, cycle skipping, and phase locking are investigated by Fokker-

Planck methods. The mean square estimation error is obtained exactly for the first-order signal-to-noise ratios (SNR) and demodulator gains. Linear methods of analysis are shown to lead to erroneous results even when the SNR is large. Since solutions to the Fokker-Planck equation for angle-modulation problems are usually difficult to obtain, an orthogonal projection technique is presented for obtaining approximate solutions. The approximate solutions are shown to compare favorably with simulations above and below threshold for the frequency demodulation of a message with a first-order spectrum. (Author)

AD-767 717/2GA PC$5.25/MF$1.45
Stanford Univ Calif Stanford Electronics Labs
NOISE SUBTRACTING FILTER STUDY.
Final rept. 28 Jan 71-27 Jan 72,
John Kaunitz, and Bernard Widrow. 3 Oct 73,
179p Rept nos. SU-SEL-72-038, TR-6798-1
Contract N00024-71-C-1189

Descriptors: (*Information theory, Interference), Electric filters, Noise, Adaptive systems, Microphones, Speech, Electrocardiography, Analog-to-digital converters, Transients, Statistical analysis, Stochastic processes, Theorems.
Identifiers: *Signal processing, *Filtering theory, Adaptive filters.

A new approach is presented to the problem of suppressing broadband additive interference corrupting a received signal. The noise cancelling procedure developed for the suppression of such interference is intended for problem situations where a second independent input related to the interfering process but not to the signal itself can be easily obtained. This input is called the 'reference' and is used, after suitable filtering, to cancel the interference in the main or primary input. This filtering process is adaptive and is based on the Least Mean Square algorithm of Widrow and Hoff. The algorithm is applied here so as to minimize the output power of the system on the basis of measurements at the system terminals. The adaptive algorithm requires no a priori knowledge about the properties of the system inputs, but a certain amount of qualitative a priori knowledge is required for the proper design of the built in system parameters. In as much as the required signal itself is not filtered, it remains undistorted by the noise cancelling process. Some aspects of the implementation and practical application of adaptive filters are briefly discussed. The successful application of the noise cancelling concept, using a real-time hybrid adaptive signal processor, in two distinctly different practical situations is described. (Modified author abstract)

AD-767 848/5GA Reprint
Massachusetts Inst of Tech Cambridge Dept of Electrical Engineering
THE BARANKIN BOUND: A GEOMETRIC INTERPRETATION,
Jose Paulo A. Albuquerque. 2 Feb 73, 3p
Contract DAAB07-71-C-0300
Revision of report dated 15 Sep 72.
Availability: Pub. in Institute of Electrical and Electronics Engineers Transactions on Information Theory, vIT-19 n4 p559-561 Jul 73.

Descriptors: (*Information theory, Statistical analysis), Hilbert space, Measure theory.
Identifiers: Barankin bounds.

It is well known that the Barankin bound is locally the tightest lower bound on the variance of any unbiased estimator. If the minimum-variance unbiased-parameter estimation problem is viewed as a minimum-norm problem in an appropriate Hilbert space, the Barankin bound has a very simple geometric interpretation. This interpretation also gives some insight into the influence of bias on the estimation error. (Author)

AD-768 270/1GA Reprint
Polytechnic Inst of Brooklyn N Y Dept of Electrical Engineering
ALGEBRAIC DECODING OF BLOCK CODES OVER A Q-ARY INPUT, Q-ARY OUTPUT CHANNEL, Q > Q,
Stanley Wainberg, and Jack K. Wolf. 1 Mar 72,
17p AFOSR-TR-73-1846
Contract F44620-71-C-0001
Availability: Pub. in Information and Control, v22 n3 p232-246 Apr 73.

Descriptors: (*Decoding, Algorithms), Algebra, Set theory, Data transmission systems, Theses.
Identifiers: *Block codes, Data transmission, Hamming codes, Algebraic decoding.

A technique is presented for the algebraic decoding of block codes over a q-ary input, Q-ary output channel (Q > q). It is assumed that an algebraic decoding algorithm is known for a simple channel such as a channel where the input alphabet is identical to the output alphabet. This decoding algorithm is then adapted for use over the actual channel. The technique can be used in conjunction with an arbitrary distance measure between input and output vectors. Thus, Hamming distance, Lee distance, or a burst distance can be assumed. Examples are presented for each of these distances. (Author)

9E. Subsystems

AD-767 734/7GA PC$3.00/MF$1.45
California Univ Irvine School of Engineering
THRESHOLD BEHAVIOR OF A QUASI-OPTIMUM FM DEMODULATOR,
Francis S. Nakamoto, and Neil J. Bershad. Jun 73, 13p
Contract N00014-69-A-0200-9004

Descriptors: (*Demodulators, Frequency modulation), Numerical analysis.

An analytical technique is presented here for obtaining approximate expressions for both the phase and message estimate variances for an FM demodulator. Numerical computation, for both above and below threshold operation, demonstrate the accuracy of the approximate expressions. (Author)

AD-767 817/0GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
RADIATION RESISTANCE OF A CYLINDRICAL ANTENNA RADIATING IN WEAKLY IONIZED PLASMA,
K. P. Singh, P. K. Shukla, and K. D. Misra. 17 Nov 70, 7p AFCRL-TR-73-0451
Grant EOOAR-70-0070
Availability: Pub. in International Jnl. of Electronics, v32 n2 p 147-152 1972.

Descriptors: (*Antennas, Plasma medium), Electromagnetic fields, Cylindrical bodies, Radiofrequency power, India.

The electromagnetic and electroacoustic field components of cylindrical antenna radiating in weakly ionized plasma are obtained. Assuming the plausible current distribution, expressions for radiation resistances and radiated power of electromagnetic and electroacoustic field on the wave are obtained. The effect of electron collision on the electroacoustic and electromagnetic radiation resistances and total power radiated is discussed. It is concluded that for precise communication purposes an account of the radiating surroundings should be made.

AD-767 821/2GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
EFFECT OF THE EARTH'S CONDUCTIVITY ON THE RADIATION CHARACTERISTICS OF MONOPOLE ANTENNA,
K. P. Singhe, and P. K. Shukla. 19 Dec 70, 8p
AFCRL-TR-73-0452
Grant EOOAR-70-0070
Availability: Pub. in International Jnl. of Electronics, v32, n5 p505-511 1972.

Descriptors: (*Omnidirectional antennas, Electromagnetic fields), Radiofrequency power, India.
Identifiers: Monopole antennas, Far field.

An expression for the electric and magnetic fields at a far point due to a monopole antenna on the conductive Earth is obtained. With the Earth's conductivity term included the radiated power and the radiation resistance of the monopole antenna have been calculated. The variation of radiation resistance with conductivity of the Earth and radiation frequency has been studied. (Author)

AD-767 833/7GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
RADIATION RESISTANCE OF A CYLINDRICAL ANTENNA IMMERSED IN A WEEKLY IONIZED MAGNETOPLASMA. II,
P. K. Shukla, and K. P. Singh. 3 Jan 71, 5p
AFCRL-TR-73-0460
Grant EOOAR-70-0070
Availability: Pub. in International Jnl. of Electronics, v32 n6 p711-714 1972.

Descriptors: (*Antennas, Plasma medium), Magnetic fields, Electromagnetic fields, Cylindrical bodies, Radiofrequency power, India.

The field components for electromagnetic and electroacoustic waves from a cylindrical antenna radiating in a weakly ionized magnetoplasma and expressions for radiation resistances assuming sinusoidal current distribution in the antenna have been obtained. The effect of a steady magnetic field on the radiation resistances has been discussed. It has been concluded that the magnetic field changes considerably the radiation characteristics of an antenna. (Author)

AD-767 906/1GA PC$3.00/MF$1.45
Syracuse Univ N Y
ANTENNA PATTERN DISTORTION COMPUTER PROGRAM.
Technical rept.,
Jose' Perini, and Kazuhiro Hirasawa. Aug 73, 43p*
RADC-TR-73-230
Contract F30602-72-C-0360

Descriptors: (*Antenna radiation patterns, *Computer programs), Distortion, Electromagnetic compatibility, Communication systems, Numerical analysis.
Identifiers: Honeywell 635 computers, FORTRAN 4 programming language, FORTRAN.

Presently, when a new communication facility is designed, there is no simple way that the project engineer can predict the interaction between the many antennas that will be present in the facility. The available rules of thumb are too crude and do not really give any detailed information on the antenna pattern distortion or mutual coupling effects. Recent developments in the area of computer aided design of antennas allowed the development of a computer program that can perform an accurate analysis of the most common antenna installations with far more detail than has been possible. The description and usage of this program is the subject of the report. (Author)* *

AD-767 907/9GA PC$3.75/MF$1.45
Ikor Inc Burlington Mass
HIGH POWER TRAVATRON INVESTIGATION.
Final rept. 21 Oct 71-31 Dec 72,
J. M. Proud, Jr., and W. H. McNeill. Aug 73, 84p
RADC-TR-73-227
Contract F30602-72-C-0068

Descriptors: (*Radiofrequency generators, Microwave equipment), Performance(Engineering), Radiofrequency power, L band, Modulators, Signal generators, Radiofrequency pulses.
Identifiers: *Travatrons.

A program was conducted to investigate techniques associated with enhancing the peak power generating capabilities of the Travatron. Analyses aimed at optimizing power-to-size ratios of the device and determination of operating limits are reported. Various techniques for generation of high voltage pulses suitable for driving the Travatron are analyzed and tested. A breadboard model Travatron generating over 10 MW peak power in 10 ns pulses at 1.3 GHz is also described. (Author)

AD-767 909/5GA PC$4.25/MF$1.45
Atlantic Research Corp Alexandria Va Advanced Programs Group
METHODS OF MOMENTS APPLICATIONS. VOLUME II. NEAR FIELDS OF THIN WIRE ANTENNAS.
Final rept. Jun 71-Jan 73,
A. T. Adams, Thomas E. Baldwin, Jr., Daniel E. Warren, and Ephraim Mendelovicz. Aug 73, 121p
RADC-TR-73-217-Vol-2
Contract F30602-71-C-0358
Prepared in cooperation with Syracuse Univ., N.Y. Dept. of Electrical and Computer Engineering, Contract F30602-72-C-0360.

Descriptors: (*Antennas, Electromagnetic fields), Numerical analysis, Dipole antennas, Antenna arrays, Antenna radiation patterns, Radiation hazards.
Identifiers: Near field, Thin wire antennas, Method of moments.

The method of moments is applied to wire antenna near-field problems. A numerical method for the computation of near electric and magnetic fields of thin-wire antenna structures is described. Details of the method are included, together with examples of its application to various problems of engineering interest. Comparative studies of typical near-field problems indicate results to be accurate as close as the length of one subsection from the wire surface, or as close as 3 to 5 wire radii. Methods for checking near-field computations are described. The selective use of a Hertzian dipole model reduced computation time considerably (15/1) without sacrifice of accuracy. The near fields of a half-wave dipole and of arrays (broadside and endfire) are described in detail. The near fields of an array and resultant radiation hazards are significantly affected by mutuals. The near-field polarization ellipse is characterized. (Author)

AD-768 022/6GA PC$40.00/MF$40.00
IIT Research Inst Chicago Ill Reliability Analysis Center
MICROCIRCUIT DEVICE MALFUNCTION REPORT,
Irvin L. Krulac. Aug 73, 140p* Rept no. RAC-MDMR-0273
Contract F30602-73-C-0065
Supersedes report dated Feb 73, AD-759 846.

Descriptors: (*Integrated circuits, *Failure(Electronics)), (*Semiconductor devices, Failure(Electronics)), Reliability(Electronics), Malfunctions, Corrections, Data, Films, Semiconductors, Logic circuits.
Identifiers: Microelectronics, Hybrid microcircuits, Thin films, Thick films, Metal oxide semiconductors.

Provides a complete history of malfunctions reported during equipment assembly, test checkout and field operations. Where performed, failure autopsy results and corrective actions are also indicated. The listing is organized and presented by manufacturer and part type. Entries also identify other pertinent device descriptors such as applied screens, package type, manufacturing date code as well as the system designation on the date malfunction was reported. Completely revised and reissued semiannually. (Author)

AD-768 091/1GA PC$2.75/MF$1.45
Harry Diamond Labs Washington D C
THIN-FILM HYBRID MICROCIRCUITRY. PART I. BOXCAR CIRCUIT FOR A CURRENT HDL FUSE SYSTEM.
Technical memo.,
Adolph J. Edwards. May 73, 17p Rept no. HDL-TM-73-10

Descriptors: (*Integrated circuits, Sampling), Video signals, Design, Microminiaturization(Electronics), Photoengraving, Films, Fuzes(Ordnance).
Identifiers: Thin films, Computer aided design, *Hybrid microcircuits.

A thin-film hybrid version of the boxcar circuit for a current Harry Diamond Laboratories fuze system was developed. A single circuit was laid out and a computer program written to generate 4 identical circuit patterns using a computer-tape driven plotter. The resistor-conductor patterns were produced by standard photolithographic techniques, and discrete chip devices (diodes, capacitors, and transistors) were attached with conducting epoxy cement. Connections to the chip devices and to lead-out pins were made by thermocompression wire bonding to complete the circuit fabrication. Preliminary electrical tests indicated acceptable insertion losses of approximately 0.6 dB and high-frequency roll-off points in the expected frequency range. (Author)

AD-768 207/3GA PC$3.00/MF$1.45
Westinghouse Research Labs Pittsburgh Pa
ELECTROLUMINESCENT FILM DISPLAY DEVICE.
Quarterly rept. no. 3, 22 May-22 Aug 72,
Thomas P. Brody, Albert G. Fischer, William S. Escott, Edward W. Greeneich, and Willie Lehmann. Jul 73, 40p Rept no. 72-9F2-DSPLA-R3
ECOM-0061-3-72
Contract DAAB07-72-C-0061
See also report dated Oct 72, AD-749 790.

Descriptors: (*Display systems, Electroluminescence), Semiconducting films, Transistors, Phosphorescent materials, Life expectancy.
Identifiers: *Electroluminescence panels, Flat panel displays, Thin films.

During the reporting period, operating 6 x 6 inch X-Y addressible arrays were fabricated. The process is now fairly reproducible, and the transistor characteristics in the matrix are good. The arrays constructed included isolated transistor patterns from which it was established that low leakage devices could be deposited with good yield and uniformity. Interconnected arrays of devices were also made with similar encouraging results; these are possibly the largest integrated circuits ever made. Conventional EL-phosphor lamps have been driven with state-of-the-art TFTs and the transfer characteristics are satisfactory. In an appendix, a new model for the deterioration of ac-electroluminescence is proposed. (Author)

AD-768 214/9GA PC$3.00/MF$1.45
Tennessee Technological Univ Cookeville Dept of Electrical Engineering
AN ADAPTIVE TRANSMITTING ARRAY TO MAXIMIZE POWER FLOW IN A SPECIFIC DIRECTION.
Final rept. 1 Apr-30 Sep 73,
Roy N. Adams, Joseph N. Anderson, and William L. Fuqua. 24 Sep 73, 32p
Contract N00019-73-C-0361

Descriptors: (*Phased arrays, Adaptive control systems), Radiofrequency power, Computer programs, Simulation, Mathematical models.
Identifiers: Computerized simulation.

The purpose of the research is to demonstrate a method of increasing a transmitting arrays output in a specified direction by adaptive techniques. The report describes an analytical development of an appropriate algorithm, a digital simulation of the system, and the experimental implementation together with test results at 300 MHz. (Modified author abstract)

AEEW-M-1119/GA PC$4.50/MF$1.45
Atomic Energy Establishment, Winfrith (England).
WORD-LENGTH LIMITATIONS ON THE PERFORMANCE OF LINEAR DIGITAL FILTERS.
J. B. Knowles. Mar 73, 48p
U.S. Sales Only.

Descriptors: (*Electric filters, *Performance testing), Data processing, Electronic equipment.

For abstract, see NSA 28 06, number 15034.

COM-73-11626/1GA Reprint
Colorado Univ., Boulder. Dept. of Electrical Engineering.
RADIATION OF A BURIED DIPOLE IN THE PRESENCE OF A SEMI-INFINITE METALLIC TUBE,
David C. Chang. 11 Jan 72, 9p NOAA-73092715
Grant NOAA-E22-58-70(G)
Pub. in Radio Science, v8 n2 p147-154 Feb 73.

Descriptors: (*Underground antennas, Electromagnetic wave transmission), Metal pipe, Far field, Electromagnetic radiation, Dipole antennas, Antenna radiation patterns, Wiener-Hopf equations.

The problem of a buried axial Hertzian dipole placed at the end of a semi-infinitely long metallic tube is associated with the investigation of electromagnetic through-the-earth propagation. Under a thin-tube approximation explicit analytic expression of the far-field is obtained by employing the Wiener-Hopf technique. Numerical results are presented in this paper for various dipole locations and ground conductivities. The improvement over the result based upon a Kirchhoff's approximation is noted. (Author)

N73-29102/3GA PC$4.25/MF$1.45
Royal Aircraft Establishment, Farnborough (England).
MEASUREMENTS ON HIGH AND LOW GAIN L-BAND AIRCRAFT AERIALS USING TRANSMISSIONS FROM A HIGH ALTITUDE BALLOON.
W. T. Blackband, and M. J. Sidford. Mar 73, 43p
RAE-TR-73008

Descriptors: *Aircraft antennas, *Flight tests, *High altitude balloons, *High gain, *Ultrahigh frequencies, Beam waveguides, Dipole antennas, Slot antennas, Transponders.

For abstract, see STAR 1120

N73-29128/8GA PC$3.00/MF$1.45
Japan Broadcasting Corp., Tokyo.
MICROWAVE FILTER WITH MOUNTED PLANAR CIRCUIT IN WAVEGUIDE.
Y. Konishi, K. Uenakada, N. Yazawa, and N. Hoshino. Mar 73, 12p NHK-LABS-NOTE-162
Tran-Transl. Into English of the Book "(Microwave)" Japan, 26 Oct. 1972 p 72-85.

Descriptors: *Bandpass filters, *Low cost, *Microwave filters, *Resonators, Circuit diagrams, Waveguides.

For abstract, see STAR 1120

N73-29129/6GA PC$3.00/MF$1.45
Japan Broadcasting Corp., Tokyo. Radio Frequency Engineering and Satellite Broadcasting Research Group.
NEW MICROWAVE COMPONENTS WITH MOUNTED PLANAR CIRCUIT IN WAVEGUIDE.
Y. Konishi, K. Uenakada, N. Yazawa, and N. Hoshino. Mar 73, 12p NHK-LABS-NOTE-163
Tran-Transl. Into English of the Book "Microwave" Japan, lece, 26 Oct. 1972 p 72-84.

Descriptors: *Equipment specifications, *Low cost, *Microwave equipment, *Sensitivity, *Superhigh frequencies, Circuit diagrams, Waveguides.

For abstract, see STAR 1120

PATENT-3 701 954/GA Not available NTIS
Department of the Navy Washington D C
ADJUSTABLE PULSE TRAIN GENERATOR.
Patent,
Albert F. Seminatore, and Steven R. Bryan. Filed 7 Jul 71, patented 31 Oct 72, 6p Rept nos. PAT-APPL-160 381,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Pulse generators, *Patents), Adaptive systems, Comparators, Logic circuits, Relaxation oscillators, Timing circuits.
Identifiers: PAT-CL-328-59.

The patent describes a compact simplified pulse generator for generating a train of accurately timed pulses. The timing or spacing between pulses can be adjusted as desired. This is accomplished using a single comparator and a single monostable multivibrator with a digitally controlled reference voltage generator.

PATENT-3 704 463/GA Not available NTIS
Department of the Navy Washington D C
DIRECTION FINDING ANTENNA SYSTEM.
Patent,
George H. Barry. Filed 2 Jun 70, patented 28 Nov 72, 5p Rept nos. PAT-APPL-42 640,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Antennas, Direction finding), (*Patents, Antennas), Antenna arrays.
Identifiers: PAT-CL-343-100-R.

The patent describes a direction finding antenna system having a large circle of active reflector antenna elements and a smaller concentric circle of focal point active antenna elements. The outer circle consists of several hundred antenna elements where each element comprises a horizontal one-half wave length horizontal dipole and a one-fourth wave length vertical dipole. The horizontal dipole receives the incoming signal the output of which is amplified and applied to the input of the vertical dipole which then retransmits the signal. A group of reflector antenna elements forming a segment of the outer circle receive and retransmit the incoming signal to a focal point where the signal is received by a focal point antenna on the inner circle. The signal from the focal point antenna receiving the retransmitted signal thus represents the output of a directional antenna. A display of signal arrival direction is obtained from the output of the focal point antennas.

PATENT-3 706 932/GA Not available NTIS
Department of the Navy Washington D C
AMPLITUDE INDEPENDENT, AUTOMATIC FREQUENCY CONTROL/DISCRIMINATOR.
Patent,
Richard Smith Hughes. Filed 7 Jan 71, patented 19 Dec 72, 4p Rept nos. PAT-APPL-104 618,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Frequency converters, *Patents), Mixers(Electronics), Power dividers, Band-pass filters, Video signals.
Identifiers: PAT-CL-325-438.

The patent relates to a system for deriving a constant intermediate frequency output over a band of input frequencies. The system consists of a mixer, a power splitter for splitting the output of the mixer into two segments of equal power, two band pass filters connected to the power splitter and a servo loop incorporating a variable frequency local oscillator whose output is connected to the mixer. The output of the local oscillator is controlled to maintain the output of the mixer at an essentially constant frequency.

PATENT-3 713 034/GA Not available NTIS
Department of the Navy Washington D C
AUDIO SIGNAL CONTROLLED AMPLITUDE MODULATION CIRCUIT OF SQUARE WAVE OUTPUT.
Patent,
Allan A. Schwartz. Filed 26 Oct 71, patented 23 Jan 73, 4p Rept nos. PAT-APPL-192 120,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Modulators, *Patents), Amplitude modulation, Circuits, Radiofrequency, Waveform generators.
Identifiers: PAT-CL-332-31-T.

The patent describes the amplitude modulation of a radio frequency. Minimum distortion and good linearity is accomplished by driving a squaring circuit of the alternately conducting two transistor type at the radio frequency while using the audio signal to control amplitude of the square wave output. Bridge and differential amplifier feedback means are used to assure 50% duty cycles for the squaring circuit transistors.

PATENT-3 714 601/GA Not available NTIS
Department of the Navy Washington D C
VARIABLE DIRECT CURRENT BIAS CONTROL CIRCUIT FOR LINEAR OPERATION OF RADIO FREQUENCY POWER TRANSISTORS.
Patent,
Robert Minton, and Constantine Kamnitsis. Filed 14 Oct 71, patented 30 Jan 73, 4p Rept nos. PAT-APPL-189 439,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Transistor amplifiers, *Patents), Control systems, Circuits, Radiofrequency power, Gain.
Identifiers: PAT-CL-330-29.

The patent describes a variable direct current (DC) bias control circuit for linear gain operation of a radio frequency (RF) power transistor. A DC amplifier is coupled to sense the change in voltage drop across a biasing resistor of the RF power transistor and is operative to maintain this voltage drop constant to provide a linear gain of the power transistor throughout 10% to 90% of its rated power output within a 1 1/2 decibel variation.

PATENT-3 714 661/GA Not available NTIS
Department of the Navy Washington D C
METHOD AND APPARATUS FOR COUPLING MULTIPLE POWER SOURCES TO SINGLE RADIATING ANTENNA.
Patent,
Joseph E. Kershaw. Filed 24 Jan 72, patented 30 Jan 73, 4p Rept nos. PAT-APPL-219 999,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D. C. 20231 $0.50.

Descriptors: (*Antenna components, *Patents), Coupling circuits, Broadband, Multiple operation, Naval equipment, Shipborne.
Identifiers: PAT-CL-343-858.

The patent relates to a single antenna used to radiate power from multiple power sources having a wide, composite frequency band. Frequency-related pairs of the sources are combined in input hybrid junction devices. The combined outputs thereof are re-combined in successive hybrid junctions. The re-combined outputs are combined a last time in an output hybrid junction to produce a wide band output.

PATENT-3 715 692/GA Not available NTIS
Office of the Secretary of the Army Washington D C
MICROSTRIP-SLOT LINE PHASE SHIFTER.
Patent,
Max L. Reuss, Jr. Filed 10 Jan 72, patented 6 Feb 73, 6p Rept nos. PAT-APPL-216 510,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Phase shifters, *Patents), Strip transmission lines, Dielectrics, Metal coatings, Ferrites, Garnet, Magnet fields, Integrated circuits.
Identifiers: PAT-CL-333-24-1.

The patent describes a microwave-integrated-circuit phase shifter comprising a dielectric substrate such as ferrite, one side being metallized to form a slot line and the other being metallized to form a paralleling microstrip transmission line. The two lines are coupled together through the dielectric substrate. A region of circular polarization of the input signal is set up between the lines and a magnetic field which is adjustable in amplitude is applied in the direction of the two lines. Variation of the amplitude of the magnetic field varies the amount of phase shift between the input and output of the device.

9F. Telemetry

PATENT-3 761 622/GA Not available NTIS
Department of the Interior, Washington, D.C.
AMPLITUDE MODULATED TELEMETERING SYSTEM.
Patent,
Robert A. Stucklen. Filed 23 Nov 70, patented 25 Sep 73, 12p PAT-APPL-92 116, DOCKET/REC-1682
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Telemetry, *Patents), Amplitude modulation.
Identifiers: PAT-CL-178-66-R.

The patent describes a system where power system phase and frequency are telemetered by amplitude modulating a carrier wave. In the modulating process a sinusoidal input is shaped to a square waveform and filtered through a band-pass filter. The filter output is a high frequency carrier wave ringing at the input frequency. For demodulation, the carrier wave is rectified and filtered through a low-pass filter, resulting in an approximately sinusoidal signal at the input frequency. After conversion to a sawtooth wave, the signal synchronizes an electronic telephone ringer, generating an output signal at station service voltage and frequency.

10. ENERGY CONVERSION (NON-PROPULSIVE)

10A. Conversion Techniques

TID-26336/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.
POTENTIAL FOR ENERGY CONSERVATION THROUGH INCREASED EFFICIENCY OF USE.
E. Hirst, and J. C. Moyers. 1973, 22p

Descriptors: (*Energy consumption, *Efficiency), Air conditioning, Economics, Electric conductivity, Energy source conservation, Environment, Human populations, Thermal insulation, Transport, Usa.

For abstract, see NSA 28 05, number 12480.

10B. Power Sources

AD-768 130/7GA PC$8.25/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
DETERMINATION OF THE NUMBER OF HYDROCARBON-AIR FUEL CELLS AND MAINTENANCE PERSONNEL REQUIRED BY A MISSION,
Thomas H. Proeschel. May 73, 123p Rept no. USAMC-ITC-1-73-16

Descriptors: (*Fuel cells, *Auxiliary power plants), Mobile, Military requirements, Computer programs, Maintenance.
Identifiers: *Hydrocarbon air fuel cells, Computerized simulation.

The report explores these questions: 1) how many hydrocarbon-air fuel cell power plants should be used in a standby configuration to insure continuous power for a small, field type communications facility, and 2) how many repair personnel will be required to maintain the power plants for a number of these communication facilities. A GASP II events simulation model is developed that combines environmental and power plant design information to answer the above deployment and personnel questions. Results of the study indicate that for the environment and tactical situation investigated, only two fuel cell power plants in standby configuration would insure the same or better facility power reliability as that would be obtained by using three gasoline engine generators in standby configuration. Also there would be a substantial reduction in the number of repairmen that would be required id fuel cell plants were used instead of gasoline generators. (Author)

AD-768 222/2GA PC$3.75/MF$1.45
Ferranti-Packard Ltd Toronto (Ontario)
FABRICATION OF A LIGHTWEIGHT SUPERCONDUCTING MHD MAGNET.
Final rept. Sep 70-May 73,
David Gluck, and David L. Atherton. May 73, 77p Rept no. L515 AFAPL-TR-73-63
Contract F33615-69-C-1212

Descriptors: (*Magnetohydrodynamic generators, Magnets), (*Magnets, *Superconductors), Superconductivity, Coils, Manufacturing methods, Airborne, Containers, Canada.
Identifiers: *Superconducting magnets, Dewar flasks.

The report contains the details of fabricating a lightweight superconducting magnet suitable for a portable magnetohydrodynamic (MHD) project. Problems in winding of the pancake coils, bending of the coil ends to a saddle form and bonding of the insulation were overcome by controlled dimensioning and variable fixturing. Preimpregnated E glass filament strands are used for the former and hoops. Construction techniques are illustrated. Epoxy fibreglass cloth end plates and glass filament ties are used to restrain the end repulsive forces. Basic differences of the actual magnet fabricated and the final design conception (reference design 69) are included together with additional stress and heat calculations for the dewar and magnet system. (Author)

AD-768 232/1GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
CONSEQUENCES OF THE PRESENT POLICY OF DEMAND ACCOMODATION,
Ronald D. Doctor. Apr 73, 20p Rept no. P-5016
Presented at the Assembly Subcommittee on State Electrical Energy Policy on 16 Feb 73.

Descriptors: (*Electric power production, Predictions), Management planning, Consumption.
Identifiers: *Electric power demand, Electric power generation, Policies, Demand(Economics).

The report examined potential technological solutions to the problems caused by continuing rapid growth of electricity demand. It finds these technological solutions by themselves are inadequate. It concludes that there is a clear need to consider and evaluate policies that attack the root of the problem--the rapidly growing demand for electricity. Combined with other policies to stretch the fuel resource base, a policy of slowing the growth of California's electricity consumption could provide us with sufficient time for the resolution of current controversies and the development of new environmentally compatible supply technologies.

AD-768 292/5GA PC$3.75/MF$1.45
Naval Civil Engineering Lab Port Hueneme Calif
EARTH HEAT SINKS FOR UNDERGROUND POWER SOURCES,
Technical note,
S. C. Garg. Aug 73, 83p* Rept no. NCEL-TN-1306

Descriptors: (*Power plants(Establishments), *Heat sinks), Underground structures, Soils, Cost effectiveness, Computer programs, Conduction(Heat transfer), Civil defense systems.

The cost effectiveness of earth heat sinks for underground power plants operating in a closed cycle over limited durations in time was determined through a transient heat conduction analysis. A comparison of heat absorption capacity of earth heat sinks per cubic foot volume with the capacities of stored water and stored ice heat sinks was carried out for a specific set of operating conditions. The comparison has shown that the cost of an earth heat sink using select backfill is approximately 6 and 14% of the cost of a stored ice heat sink, and approximately 10 and 23% of the cost of a stored water heat sink at sites with full and zero water tables, respectively. The overall volume of the earth heat sink was estimated to be 0.8 and 1.5 times the volumes of stored water and stored ice heat sinks, respectively. It is recommended that earth should be considered as an alternative waste heat sink for limited duration, closed cycle underground power systems because of its simplicity and lower cost. (Author)

AEC-tr-7420/GA PC$3.00/MF$1.45
POWER PLANT AND WATER WORKS (PREUSSAG).
18p
Translation of Kraftwerk und wasserwerk (Preussag). .

Descriptors: (*Power plants, *Design), Electric power, Steam, Water.

For abstract, see NSA 28 04, number 10473.

AI-AEC-13099/GA PC$4.00/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
NAK LOOP TESTING OF THERMOELECTRIC CONVERTER MODULES.
J. L. Johnson. 21 May 73, 38p NASA-CR-121192
Contract AT(04-3)-701

Descriptors: (*Thermoelectric generators, *Performance testing), Liquid metals, Potassium alloys, Sodium alloys.

For abstract, see NSA 28 06, number 12789.

COM-73-11692/3GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
THERMIONICS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1970-Sep 73,
Edward J. Lehmann. Oct 73, 122p* NTIS-WIN-73-051
Supersedes NTIS-PK-19.

Descriptors: (*Thermionic converters, *Bibliographies), Thermionic power generation, Cesium thermionic converters, Radioisotope heat sources, Nuclear auxiliary power units, Thermionic diodes.

The NTISearch bibliography contains 117 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts cover over three years of government research on thermionics. The topics include power generation, power plant design, converter design, and basic research on thermionic materials. (Author)

GULF-GA-A-11090/GA PC$3.00/MF$1.45
Gulf General Atomic CO., San Diego, Calif.
ISOTEC TECHNOLOGY PROGRAM. ANNUAL SUMMARY REPORT FOR THE PERIOD JULY 1, 1970--JUNE 30, 1971.
N. Elsner, L. Rovner, G. Staley, C. Mautz, and R. Leedy. 26 Jan 73, 86p
Contract AT(29-2)-2564

Descriptors: (*Thermoelectric generators, *Research programs), (*Thermocouples, *Fabrication), Antimony alloys, Bonding, Compacting, Design, Germanium alloys, Lead alloys, Manganese alloys, Metallurgy, Performance testing, Powder metallurgy, Pressing, Silicon alloys, Silver alloys, Tellurides.

For abstract, see NSA 28 04, number 08052.

LA-UR-73-849/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
COMBINED NUCLEAR AND HYDROGEN ENERGY ECONOMY: A LONG TERM SOLUTION TO THE WORLD'S ENERGY PROBLEM.
L. A. Booth, J. D. Balcomb, and F. J. Edeskuty. 1973, 9p CONF-730811-8
Contract W-7405-eng-36

Descriptors: (*Hydrogen, *Synthetic fuels), (*Nuclear power, *Energy sources), Economics, Energy source conservation, Fossil fuels, Heating, Human populations, Industry, Transport.

For abstract, see NSA 28 06, number 15021.

LA-5289-MS/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
GEOTHERMAL ENERGY.
M. C. Smith. May 73, 31p
Contract W-7405-eng-36

Descriptors: (*Geothermal energy, *Electricity), Economics, Electric power, Environment, Steam.

For abstract, see NSA 28 06, number 15020.

MLM-1972/GA PC$4.00/MF$1.45
Mound Lab., Miamisburg, Ohio.
CONVENTIONAL DRAWING OF PT + 20 WT % RH HEAT SOURCE (ACE) LINER BODIES.
D. A. Pawlak, and W. C. Wyder. 15 Jun 73, 16p
Contract AT-33-1-GEN-53

Descriptors: (*Capsules, *Fabrication), (*Platinum base alloys, *Drawing), (*Rhodium alloys, Drawing), (*Radioisotope heat sources, Capsules), Annealing, Design, Layers, Specifications, Strain hardening, Tools.

For abstract, see NSA 28 06, number 13208.

N-70-42732/GA PC$5.45/MF$1.45
Philco-Ford Corp., Palo Alto, Calif. (Usa). Western Development Labs. Div.
ENGINEERING EXPERIMENTAL PROGRAM ON THE EFFECTS OF NEAR-SPACE RADIATION ON LITHIUM-DOPED SOLAR CELLS. SEMIANNUAL REPORT, 2 JULY 1969--30 APRIL 1970.
1 Jun 70, 54p NASA-CR-110885, WDL-TR-4213

Contract NAS7-100

Descriptors: (*Solar cells, *Physical radiation effects), Doped materials, Electrons, Lithium, Silicon.

For abstract, see NSA 28 05, number 10953.

N-72-22843/GA PC$5.45/MF$1.45
Philco-Ford Corp., Palo Alto, Calif. (Usa). Western Development Labs. Div.
ENGINEERING EXPERIMENTAL PROGRAM ON THE EFFECTS OF NEAR-SPACE RADIATION ON LITHIUM DOPED SOLAR CELLS. FINAL REPORT.
10 Nov 71, 109p NASA-CR-126151, WDL-TR-4725
Contract NAS7-100

Descriptors: (*Solar cells, *Physical radiation effects), Doped materials, Electrons, Lithium, Silicon.

For abstract, see NSA 28 05, number 10954.

N-73-16031/GA PC$4.00/MF$1.45
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
EFFECTS OF PROTON IRRADIATION AND TEMPERATURE ON 1 OHM-CM AND 10 OHM-CM SILICON SOLAR CELLS.
C. Nicoletta. Jan 73, 42p NASA-TM-X-66169, X-765-73-25

Descriptors: (*Solar cells, *Physical radiation effects), Efficiency, Mev range 01-10, Protons, Silicon, Temperature dependence.

For abstract, see NSA 28 04, number 08286.

N-73-16639/GA PC$4.00/MF$1.45
National Aeronautics and Space Administration, Cleveland, Ohio. Lewis Research Center.
CORRELATION OF EXPERIMENTAL PERFORMANCE DATA FOR A CVD TUNGSTEN--NIOBIUM, PLANAR THERMIONIC CONVERTER.
P. M. Sockol. Feb 73, 14p NASA-TM-X-2716, E-7194

Descriptors: (*Thermionic converters, *Performance), Correlations, Niobium, Tungsten.

For abstract, see NSA 28 04, number 08053.

NAA-SR-11760(Vol.1)/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
ADVANCED THERMOELECTRIC DEVELOPMENT PROGRAM PROGRESS REPORT, NOVEMBER 1965--JANUARY 1966.
J. Gill, and R. Blevitt. 31 Mar 66, 45p
Contract AT(11-1)-Gen-8

Descriptors: (*Thermoelectric generators, *Research programs).

For abstract, see NSA 28 05, number 10774.

NAA-SR-12016(Vol.1)/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
ADVANCED THERMOELECTRIC DEVELOPMENT PROGRAM. PROGESS REPORT, FEBRUARY 1966--APRIL 1966.
R. Blevitt, and J. Gill. 15 Jul 66, 55p
Contract AT(11-1)-GEN-8

Descriptors: (*Thermoelectric generators, *Research programs).

For abstract, see NSA 28 05, number 10775.

NAA-SR-12016(Vol.2)/GA PC$5.25/MF$1.45
Atomics International, Canoga Park, Calif.
ADVANCED THERMOELECTRIC DEVELOPMENT PROGRAM. PROGRESS REPORT, FEBRUARY 1966--APRIL 1966.
15 Jul 66, 62p
Contract AT(11-1)-Gen-8

Descriptors: (*Thermoelectric generators, *Research programs).

For abstract, see NSA 28 05, number 10776.

N73-29004/1GA PC$4.50/MF$1.45
Scientific Translation Service, Santa Barbara, Calif.
EXPERIMENTAL AEROGENERATOR TYPE BEST - ROMANI, DESCRIPTION, ASSEMBLY, TEST PROGRAM.
Aug 73, 50p NASA-TT-F-15037
Contract NASW-2483
Tran-Transl. Into English of the Publ. ''Aerogenerateur Experimental Type Best - Romani Description - Montage Programme d'Essai'' Paris, Elec. De France, 1958 54 p.

Descriptors: *Electric generators, *Electric power supplies, *Propellers, *Wind (Meteorology), *Wind pressure, Electric equipment, Performance tests, Systems engineering.

For abstract, see STAR 1120

N73-29005/8GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
H2-O2 AUXILIARY POWER UNIT FOR SPACE SHUTTLE VEHICLES.
Progress Report.
J. P. Joyce, D. G. Beremand, H. M. Cameron, and K. S. Jefferies. 1973, 8p NASA-TM-X-68262, E-7553
Conf-Presented at 8TH Intersociety Energy Conversion Eng. Conf., Philadelphia, 13-17 Aug. 1973.

Descriptors: *Auxiliary power sources, *Engine design, *Gas turbines, *Hydrogen oxygen engines, *Space shuttle orbiters, Equipment specifications, Product development, Systems engineering.

For abstract, see STAR 1120

N73-29006/6GA PC$17.75/MF$1.45
General Electric Co., Philadelphia, Pa.
FEASIBILITY STUDY OF A 110 WATT PER KILOGRAM LIGHTWEIGHT SOLAR ARRAY SYSTEM.
Final Report.
N. F. Shepard, C. V. Stahle, K. L. Hanson, A. Schneider, and L. E. Blomstrom. 25 May 73, 315p NASA-CR-133616, DOC-73SD4256
Contracts NAS7-100, JPL-953387
Subm-Prepared for JPL.

Descriptors: *Electric power supplies, *Manned spacecraft, *Solar cells, *Space missions, Equipment specifications, Spacecraft power supplies, Systems engineering.

For abstract, see STAR 1120

N73-29008/2GA PC$3.50/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
OPERATING EXPERIENCE OBTAINED WITH A 100 KW WIND POWER PLANT.
U. Huetter. Aug 73, 27p NASA-TT-F-15068
Contract NASW-2481
Tran-Transl. Into English from Brennstoff-Waerme-Kraft (Duesseldorf), V. 16, 1964 P333-340.

Descriptors: *Electric generators, *Electric power supplies, *Windpowered generators, Equipment specifications, Performance tests, Product development.

For abstract, see STAR 1120

N73-29009/0GA PC$3.75/MF$1.45
Scientific Translation Service, Santa Barbara, Calif.
THE DEVELOPMENT OF WIND POWER INSTALLATIONS FOR ELECTRICAL POWER GENERATION IN GERMANY.
U. Huetter. Aug 73, 32p NASA-TT-F-15050
Contract NASW-2483
Tran-Transl. Into English from Z. Breanst.-Waerme-Kraft (Duesseldorf), V. 6, No. 7, 1954 p 270-278.

Descriptors: *Electric generators, *Electric power supplies, *Propellers, *Wind effects, *Wind pressure, *Windpowered generators, Electric equipment, Equipment specifications, Systems engineering.

For abstract, see STAR 1120

N73-29010/8GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
LIFE TESTING OF A NINE-COUPLE HYBRID THERMOELECTRIC PANEL.
W. J. Bifano. Aug 73, 14p NASA-TM-X-2869, E-7487

Descriptors: *Panels, *Service life, *Thermocouples, *Thermoelectric power generation, Germanium compounds, Lead tellurides, Performance tests, Silicon junctions.

For abstract, see STAR 1120

ORNL-EIS-73-52(Vol.1)(No.5)/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
NSF--RANN ENERGY ABSTRACTS. A MONTHLY ABSTRACT JOURNAL OF ENERGY RESEARCH.
M. P. Guthrie. May 73, 40p
Contract W-7405-eng-26

Descriptors: (*Energy, *Bibliographies), Electric power, Energy consumption, Energy sources, Environment, Legal aspects, Management, Power transmission.

For abstract, see NSA 28 04, number 10476.

ORNL-NSF-EP-49/GA PC$3.50/MF$1.45
Oak Ridge National Lab., Tenn.
ELECTRICITY DEMAND IN THE UNITED STATES: AN ECONOMETRIC ANALYSIS.
T. D. Mount, L. D. Chapman, and T. J. Tyrrell. Jun 73, 29p CONF-730205-5
Contract W-7405-eng-26

Descriptors: (*Electric power, *Econometrics), (*Usa, Electric power), Cost, Electricity, Human populations, Natural gas, Variations.

For abstract, see NSA 28 05, number 12475.

PATENT-3 736 658/GA Not available NTIS
Atomic Energy Commission, Washington, D.C.
THERMIONIC GAS-PRESSURE-BONDED SHEATHED INSULATORS AND METHOD OF PRODUCING SAME.
Patent,
Cliff V. Weaver, William A. Ranken, and Robert G. Lawton. Filed 12 Oct 70, patented 5 Jun 73, 11p, PAT-APPL-79 786
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Thermionic converters, *Patents), (*Dissimilar materials bonding, Thermionic converters), Niobium, Niobium alloys, Zirconium containing alloys, Aluminum oxide, Insulation, Thermionic collectors.
Identifiers: PAT-CL-29-631.

The patent discribes gas-pressure bonding the collector of a thermionic converter, an insulator, and a metal sheath for the insulator. The trilayer thus formed is stress relieved and maintains good structural integrity during machining and during thermocycling caused by operation of the converter. The insulator is alumina and the collector and sheath consist either of niobium metal or Nb-1 wt percent Zr alloy.

PB-223 995/2GA PC$5.50/MF$1.45
Massachusetts Inst. of Tech., Cambridge. Energy Lab.
A MODEL FOR THE DETERMINATION OF OPTIMAL ELECTRIC GENERATING SYSTEM EXPANSION PATTERNS.
Final rept.,
Dennis Lloyd Farrar, and Frederick Woodruff, Jr.
Feb 73, 208p* MIT-EL-73-009
Grant NSF-GI-32874

Descriptors: (*Electric power generation, Production planning), Linear programming, Expansion, Cost comparison, Electric power plants, Sites, Environmental engineering, Computer programs.

Long range electric generating capacity expansion planning requires consideration of a diverse range of issues. To determine the optimum system expansion plan, it is necessary to create a synthesis of combinations of possible technical alternatives, observe the intertemporal effects of the system along the dimensions of the problem, and choose the set of alternatives which best meets the objectives while satisfying all constraints. A system of integrated techniques and computer codes has been formulated to evaluate the economic, environmental and reliability aspects of regional generation expansion strategies. The computer codes comprising the model are used serially and in an iterative manner to find the set of plant and site alternatives and corresponding plant operating histories which will minimize the total present worth of all capital, operating and fuel costs while satisfying the demand for electricity, fuel and site availability, pollution limits, and reliability constraints. Prototypical versions of the 3 major sub models of the GEM exist; initial testing of the capabilities and sensitivities of the first two submodels and their interface is currently being performed.

PB-224 006/7GA PC$4.50/MF$1.45
Massachusetts Inst. of Tech., Cambridge. Energy Lab.
ELECTRIC POWER UNIT COMMITMENT SCHEDULING USING A DYNAMICALLY EVOLVING MIXED INTEGER PROGRAM.
Final rept.,
J. Gruhl. Jan 73, 150p* MIT-EL-73-007
Grant NSF-GI-32874

Descriptors: (*Electric power generation, Production planning), Scheduling, Mathematical programming, System analysis, Production control, Computer programs.
Identifiers: Integer programming.

A quasi-optimal technique, realized by a dynamically evolving mixed integer program, develops regional electric power unit commitment schedules for a 1 week time span. Associated with a tradeoff between a given cost of production and the relevant ecological factors, an optimum generation schedule is formulated which considers fossil, nuclear, hydro, gas turbine, and pumped hydro facilities; power demands, reliabilities, operating constraints, startup and shutdown factors, geographic considerations, as well as various contract possibilities such as interregional power exchanges, interruptible loads, gas contracts, and optimum nuclear fuel batch utilization. A prerequisite of the model was that it be flexible enough for use in the evaluation of the optimum system performance associated with hypothesized expansion patterns. Another requirement was that the effects of changed scheduling factors could be predicted and, if necessary, corrected with a minimal computational effort. Portions of this document are not fully legible.

PB-224 045/5GA PC$3.00/MF$1.45
Massachusetts Inst. of Tech., Cambridge. Energy Lab.
MODELING OF ELECTRIC POWER DEMAND GROWTH.
Final rept.,
J. B. Woodard, Jr., M. L. Baughman, and F. C. Schweppe. Feb 73, 20p* MIT-EL-73-015
Grant NSF-GI-32874

Descriptors: (*Electric power demand, Forecasting), Mathematical models, Stochastic processes.

The paper describes a modeling approach, presently under development, directed at the growth in demand for electric power. The emphasis is to develop a mathematical model which can be used for the analysis of detailed questions, such as: How will changes in air conditioning power demand, electric rate structures, population, etc., affect the daily load shapes (MW vs time) as well as the peak power and the overall electric energy consumption. Detailed answers to these questions are needed for generation planning of capacity and plant mix (nuclear, fossil, and pumped-hydro) as well as for the evaluation of the resulting environmental and economic impacts. These issues require detailed models combining economic models with engineering considerations affecting the dynamics of load behavior. Modeling of this kind can be limited by the data available, and an important aspect of this effort is to identify the data required for a detailed understanding of the load. The approach to be employed is a combination of state space dynamic models driven by stochastic processes with econometric models.

PB-224 061/2GA PC$3.75/MF$1.45
Massachusetts Inst. of Tech., Cambridge. Energy Lab.
ECONOMIC-ENVIRONMENTAL-SECURITY TRANSFORM CURVES OF ELECTRIC POWER SYSTEM PRODUCTION SCHEDULES AND SIMULATIONS.
Final rept.,
J. Gruhl. Nov 72, 93p MIT-EL-73-006
Grant NSF-GI-32874

Descriptors: (*Electric power generation, Production planning), Mathematical programming, Scheduling, System analysis, Simulation, Computer programs.
Identifiers: Integer programming.

A quasi-optimal technique, realized by a dynamically evolving mixed integer program, is used to develop regional electric power maintenance and production sample schedules, as will as unit commitment sample schedules. The scheduling mechanisms are used to display the tradeoffs which exist between the economic costs, environmental consequences, and reliability levels of all possible optimum strategies. Specifically hypothesized expansion plans are also tested on different possible future load demand curves. The results of this project show that a great amount of flexibility is available to both the operations scheduler and the system expansion planner, and that dollar costs, water and air pollution impacts cover a very wide range of consequences. These results also show that it is probably very wasteful to operate or plan a system using any single-minded measure of desirability as a decision-making strategy. Portions of this document are not fully legible.

PB-224 079/4GA PC$4.75/MF$1.45
Massachusetts Inst. of Tech., Cambridge. Energy Lab.
ELECTRIC GENERATION PRODUCTION SCHEDULING USING A QUASI-OPTIMAL SEQUENTIAL TECHNIQUE.
Final rept.,
J. Gruhl. Apr 73, 154p* MIT-EL-73-003
Grant NSF-GI-32874

Descriptors: (*Electric power generation, Production planning), Scheduling, Mathematical programming, System analysis, Maintenance management, Computer programs.
Identifiers: Integer programming.

A quasi-optimal technique, realized by a dynamically evolving mixed integer program, is used to develop regional electric power maintenance and production schedules for a 2 to 5 year planning horizon. The power system considered is a regional pool of closely coupled facilities. Associated with a tradeoff between a given cost of production and the relevant ecological factors, an optimum production scheduler is formulated which considers fossil, nuclear, hydro, gas turbine, and pumped hydro generation facilities; power demands, reliabilities, maintenance and refueling requisites; labor coordination, geographic considerations, as well as various contracts such as interregional power exchanges, interruptible loads, gas contracts, and nuclear refueling contracts. A prerequisite of the model was that it be flexible enough for use in the evaluation of the optimum system performance associated with hypothesized expansion patterns, that is, production costing. Another requirement was that the effects of changed scheduling factors could be predicted and corrected with a minimum computational effort. Portions of this document are not fully legible.

SLA-73-163/GA PC$7.75/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
PERSPECTIVES IN U.S. ENERGY RESOURCE DEVELOPMENT.
R. H. Plumlee. Mar 73, 113p

Descriptors: (*Solar energy, *Cost), (*Energy sources, *Availability), Energy, Fossil fuels, Geothermal energy, Nuclear fuels, Synthetic fuels, Thermodynamic cycles, Usa, Wind.

For abstract, see NSA 28 05, number 12477.

SLA-73-5319/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ANALYSIS OF LINEAR FOCUSED COLLECTORS FOR SOLAR POWER.
R. B. Pope, and W. P. Jr. Schimmel. 1972, 7p
CONF-730811-6

Descriptors: (*Solar furnaces, *Design), Efficiency, Electric power, Geometry.

For abstract, see NSA 28 06, number 12790.

SLA-73-5411/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
SOLAR COMMUNITY.
R. P. Stromberg. (nd). 8p CONF-730517-1

Descriptors: (*Solar energy, *New mexico), Environment, Planning, Urban populations, Usa.

For abstract, see NSA 28 05, number 12478.

UCRL-74697/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
DEVELOPMENT OF MATERIALS FOR ENERGY-RELATED APPLICATIONS.
J. S. Kane. 10 Apr 73, 16p CONF-730416-2

Descriptors: (*Thermonuclear reactors, *Efficiency), (*Energy sources, Efficiency), (*Fossil fuels, Efficiency), (*Solar energy, Efficiency), Economics, Energy conversion, Energy transmission, Environment, Hydroelectric power, Nuclear fuels, Sun.

For abstract, see NSA 28 05, number 11245.

10C. Energy Storage

ANL-7998/GA PC$5.45/MF$1.45
Argonne National Lab., Ill.
DEVELOPMENT OF HIGH-SPECIFIC-ENERGY BATTERIES FOR ELECTRIC VEHICLES. PROGRESS REPORT, AUGUST 1972--JANUARY 1973.
E. J. Cairns, P. A. Nelson, E. C. Gay, R. K. Steunenberg, and W. J. Walsh. Apr 73, 98p
Contract W-31-109-eng-38

Descriptors: (*Electric batteries, *Research programs), (*Automobiles, Electric batteries), Electric power, Electrolytic cells, Halides, Lithium, Operation, Propulsion, Sulfur.

For abstract, see NSA 28 04, number 10511.

N73-29007/4GA PC$4.75/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
DIFFUSION ACROSS THE MODIFIED POLYETHYLENE SEPARATOR GX IN THE HEAT-STERILIZABLE AGO-ZN BATTERY.
R. Lutwack. 1 Aug 73, 55p NASA-CR-133601, JPL-TM-33-636
Contract NAS7-100

Descriptors: *Diffusion, *Polyethylenes, *Separators, *Silver zinc batteries, Computer programs, Membrane structures, Sterilization.

For abstract, see STAR 1120

SC-DR-720251/GA PC$3.50/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
DEVELOPMENT OF A LONG LIFE, WIDE TEMPERATURE RANGE BATTERY.
S. C. Levy, and F. W. Reinhardt. May 73, 27p

Descriptors: (*Electric batteries, *Performance), Electrolytes, Lifetime, Low temperature, Medium temperature.

For abstract, see NSA 28 04, number 10612.

SC-RR-720386/GA PC$4.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
SOLID ELECTROLYTE THERMAL BATTERY.
D. A. Nissen, and R. W. Carlsten. Jun 73, 37p

Descriptors: (*Electric batteries, *Electrolytes), Electrical properties, Iodine, Performance, Silver, Silver iodides, Solids.

For abstract, see NSA 28 05, number 12579.

11. MATERIALS

N73-29142/9GA PC$3.50/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
SPACE SIMULATION ULTIMATE PRESSURE LOWERED TWO DECADES BY REMOVAL OF DIFFUSION PUMP OIL CONTAMINANTS DURING OPERATION.
A. E. Buggele. 1973, 28p NASA-TM-X-68272
Conf-Proposed for Presentation at 7TH Space Simulation Conf., Los Angeles, 12-14 Nov. 1973; Sponsored by Aiaa, NASA, AM. Soc. For Testing, and Inst. Of Environ. Sci.

Descriptors: *Space simulators, *Vacuum chambers, Contaminants, Diffusion pumps, Distillation equipment, Pressure reduction.

For abstract, see STAR 1120

N73-29143/7GA PC$3.00/MF$1.45
Royal Aircraft Establishment, Farnborough (England).
THE RAE 1.5M DIAMETER ION THRUSTER LIFE TEST FACILITY.
B. P. Day, and R. Hastings. Jul 73, 12p RAE-TR-73061
Conf-Presented at Conf. On Elec. Propulsion of Space Vehicles, Culham, Engl., 10-12 Apr. 1973.

Descriptors: *Ion engines, *Ion propulsion, *Test facilities, Equipment specifications, Performance tests, Systems analysis.

For abstract, see STAR 1120

11A. Adhesives and Seals

AD-767 787/5GA PC$2.75/MF$1.45
Products Research and Chemical Corp Burbank Calif
FUEL AND HIGH TEMPERATURE RESISTANT CHANNEL SEALANT SUITABLE FOR 15-MIL GAPS.
Final rept. 1 Jan-1 Aug 73,
Hakam Singh, Robert N. Gilliland, John McShane, and Lester Morris. Aug 73, 25p*
Contract N00019-73-C-0251

Descriptors: (*Sealing compounds, Mechanical properties), (*Silicone plastics, Sealing compounds), Shrinkage, Adhesives, Heat-resistant plastics, Seals, pH, Corrosion inhibition, Chromates, Phenolic plastics, Pigments, Surface-active substances.
Identifiers: Performance evaluation, Sealers.

A formulation of a cyanosiloxane polymer has been made which meets the performance requirements of MIL-S-81323A, Class A, channel sealant for sealing 15-mil gaps at temperatures to 350F. Expansion and contraction of channel sealant during cycling was reduced by increasing pigmentation and by using solvent-fractionated polymer. Low-temperature flexibility and adhesion retention was improved by using a silane-treated pigment and replacing the epoxy with a phenolic resin. By changing pigment types and quantities, pH was varied from 4.1 to 7.7, and corrosion disappeared. Chromate pigments effectively inhibited corrosion and were incorporated into the formulation. (Modified author abstract)

AD-768 196/8GA PC$4.25/MF$1.45
Northwestern Univ Evanston Ill Dept of Mechanical Engineering and Astronautical Sciences
THERMOELASTIC INSTABILITY IN A SEAL-LIKE CONFIGURATION.
Annual rept.,
Ralph A. Burton, Virupax Nerlikar, and Rao Kilaparti. 1 Sep 73, 118p
Contract N00014-67-A-0356-0022
See also AD-743 117.

Descriptors: (*Seals, Friction), (*Friction, Thermal analysis), Heat transfer, Thermal stability, Thermal stresses, Sliding contacts, Mathematical models, Thermal conductivity, Glass, Aluminum, Iron, Graphite, Silicon carbides, Films, Pressure.
Identifiers: *Thermoelasticity, Friction heating.

The report comprises five independent studies leading progressively to an understanding of the thermoelastic behavior of sliding contacts. To be specific it deals with a seal-like configuration consisting of two tubes, contacting end to end. The effects of materials variation, oxide films and initial departures from flatness are investigated; and, as will be shown, the conditions under which surface contact departs from its initial state are delineated. The ultimate high-sliding-speed configuration of isolated contact patches separated by non contacting surfaces is treated, and both contact temperature of the patches and leakage in the gaps between are dealt with analytically. To the extent that the simplified geometry and materials choices represent real seals, the analytical results lead toward design criteria for practical applications. (Author)

PAT-APPL-380630/GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
HIGH SPEED, SELF-ACTING SHAFT SEAL.
Patent Application.
L. P. Ludwig, and W. F. Hady. Filed 19 Jul 73, 12p
NASA-CASE-LEW-11274-1,
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Rotating shafts, *Seals (Stoppers), High speed, Patent applications, Product development.

A high-speed, self-acting circumferential type shaft seal for use in turbine engines is described. One or more conventional circumferential ring seals with a central aperture are mounted in a housing. A helical groove and one or more dam seals are cut in the inner cylindrical surface of the ring seals. In another method, two or more lift pads are disposed in surface contact with the inner cylindrical surface of the seal rings. To the outside of the lift pads, two dam seals are cut in the inner cylindrical surface of two of the ring seals. In each of the methods a net outward radial force is produced during rotation of the turbine causing the ring seals to lift out of contact with the turbine shaft to minimize wear of the ring seals.

11B. Ceramics, Refractories, and Glasses

AD-767 783/4GA PC$3.00/MF$1.45
Missouri Univ Rolla Dept of Ceramic Engineering
HIGH TEMPERATURE IR GLASSES.
Technical rept. no. 4 (Final), 1 Sep 72-31 Aug 73,
Norbert J. Kreidl. 31 Aug 73, 49p
Contract N00014-69-A-0141-0003
See also report dated 31 Aug 72, AD-749 958.

Descriptors: (*Ceramic materials, Phase studies), (*Infrared optical materials, Phase studies), (*Infrared windows, Ceramic materials), Silicon compounds, Arsenic compounds, Silver compounds, Arsenides, Tellurides, Selenides, Infrared spectroscopy, Density, Crystallization, Internal friction, Microstructure, Phase diagrams.
Identifiers: Amorphous semiconductors, Semiconducting glasses, Softening points, Ternary systems.

Glasses in the system Si-As-Ag-Te-Se were found to have much higher softening temperatures than any chalcogenide glasses previously investigated. One heat treated glass had a softening temperature of 670C, which is 220 degrees higher than that of the Si-As-Se base glass. Ir transmission in relevant ranges was essentially maintained. Ag is instrumental in allowing the introduction of Se otherwise rejected in silicon chalcogenide glasses. The development of microstructure is more important than the intended increase in average bonding by the substitution of Se for Te. The microstructure involves glass-glass phase separation, with one of the phases having a much higher Tg, and, possibly, some microcrystallinity. (Modified author abstract)

AD-767 790/9GA PC$3.00/MF$1.45
Pennsylvania State Univ University Park Materials Research Lab
COMBINED ELLIPSOMETRIC AND SOFT X-RAY SPECTROSCOPIC STUDIES OF CORROSION PROCESSES ON TRANSPARENT MATERIALS.
Technical rept.,
K. Vedam, and E. W. White. 5 Oct 73, 28p Rept no. TR-1
Contract N00014-67-A-0385-0018

Descriptors: (*Glass, Surface properties), (*Corrosion, Glass), (*X-ray spectroscopy, Glass), Cleaning, Sputtering.
Identifiers: *Polarimetry.

The feasibility of carrying out systematic and precise surface characterization studies on transpareat materials by ellipsometry has been established. Specifically, it is shown that one can detect and quantitatively measure the extent of the damaged surface layers on such transparent materials. Similarly, it is shown that the soft x-ray spectroscopic method can be used to characterize the contaminant film on any material even though the film may be compositionally inhomogeneous. (Author)

AD-767 920/2GA PC-GPO/MF$1.45-NTIS
National Bureau of Standards Washington D C
INVESTIGATION OF VISCOUS FLOW IN GLASS DURING PHASE SEPARATION.
Annual rept. no. 1, Nov 72-Jun 73,
J. H. Simmons, S. A. Mills, A. Napolitano, D. H. Blackburn, and W. K. Haller. Sep 73, 42p Rept no. NBS-TN-792
Contract NAonr-12-73
Availability: Paper copy available from GPO $0.65 as C13.46: 792.

Descriptors: (*Glass, Phase studies), Viscosity, Microstructure.
Identifiers: Borosilicate glass, Phase separation, Viscous flow.

The isothermal viscosity of two borosilicate glasses, of which one is a commercial glass widely used for chemical glassware, shows a large increase (4 to 5 orders of magnitude) with heat-treatment time (ranging up to 100,000 min) near the annealing point. The two glasses have similar compositions, but differ greatly in their phase separation characteristics. Electron micrographs are used to analyze the development of microstructure during the suspected phase separation. In both glasses, it is found that the structure development is primarily responsible for the viscosity increase. An analysis of the data, and a theoretical interpretation of the effect are presented. (Author)

BARC-646/GA PC$3.00/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
SINTERING OF BERYLLIUM OXIDE: INFLUENCE OF MINOR ADDITIONS ON DENSIFICATION AND MICROSTRUCTURAL DEVELOPMENT.
R. Bhat, and V. K. Moorthy. 1972, 19p
U.S. Sales Only.

Descriptors: (*Beryllium oxides, *Sintering), Chemical composition, Density, Grain growth, Grain size, Impurities, Microstructure, Quantity ratio, Titanium oxides, Magnesium oxides, Iron oxides.

For abstract, see NSA 28 05, number 11127.

COM-73-50840/0GA PC-GPO/MF$1.45-NTIS
National Bureau of Standards, Washington, D.C. Inst. for Materials Research.
PROPERTIES OF GLASSES IN SOME TERNARY SYSTEMS CONTAINING BAO AND SIO2.
Final monograph rept.,
Given W. Cleek, and C. L. Babcock. Sep 73, 44p
NBS-MN-135
Paper copy available from GPO $0.70 as C13.44:135.

Descriptors: (*Glass, Barium oxides), Phase diagrams, Titanium dioxide, Lanthanum compounds, Tantalum oxides, Zinc oxides, Aluminum oxide, Niobium oxides, Silicon dioxide, Refractivity, Liquidus, Density(Mass/volume), Infrared radiation, Sag.

The glass forming regions in six ternary oxide systems containing BaO, SiO2 and a third oxide have been determined. The properties of the resulting glasses were measured and the results are reported. The data on refractive indices, dispersions and specific volumes were evaluated by computer methods in an attempt to identify 'substructures' containing the cations present in the glasses. (Author)

CONF-730601-/GA PC$10.60/MF$1.45
Oak Ridge National Lab., Tenn.
11TH BIENNIAL CONFERENCE ON CARBON, GATLINBURG, TENNESSEE, JUNE 4--8, 1973. EXTENDED ABSTRACTS AND PROGRAM.
1973, 372p

Descriptors: (*Carbon, *Chemical properties), (*Graphite, Chemical properties), Adsorption, Anisotropy, Coated fuel particles, Composite materials, Crystallization, Electrical properties, Fabrication, Filaments, Mechanical properties, Meetings, Meetings, Microstructure, Nuclear fuels, Physical radiation effects, Thermodynamic properties, Uses.

For abstract, see NSA 28 05, number 11338.

CONF-730707-2/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
APPLICATION OF FRACTURE MECHANICS TO GRAPHITE UNDER COMPLEX STRESS CONDITIONS.
G. T. Yahr, and R. S. Valachovic. 1972, 11p

Descriptors: (*Graphite, *Fractography), Cylinders, Defects, Elasticity, Finite element method, Fractures, Notches, Pressure dependence, Stresses.

For abstract, see NSA 28 06, number 13351.

EUR-4947/GA PC$3.00/MF$1.45
European Atomic Energy Community, Ispra (Italy). Joint Nuclear Research Center.
EFFECT OF MACROPOROSITY DISTRIBUTION IN INDUSTRIAL ELECTROGRAPHITES ON MECHANICAL RESISTANCE.
F. Lanza, and G. Marengo. Apr 73, 18p
In Italian. U.S. Sales Only.

Descriptors: (*Graphite, *Mechanical properties), Density, Distribution, Fractures, Porosity.

For abstract, see NSA 28 04, number 08782.

KFK-1753/GA PC$9.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Material und Festkoerperforschung.
DEFORMATION BEHAVIOUR OF OXIDE-BASE AL SUB 2 O SUB 3 -CERMETS WITH VARYING CR-CONCENTRATION.
G. Engelhardt. Jan 73, 148p
In German. U.S. Sales Only.

Descriptors: (*Aluminium oxides, *Creep), (*Cermets, Creep), (*Chromium alloys, Creep), Activation energy, Deformation, Grain size, Porosity, Stresses, Variations, Very high temperature, Quantity ratio.

For abstract, see NSA 28 04, number 10580.

LA-5223-PR/GA PC$3.25/MF$1.45
Los Alamos Scientific Lab., N. Mex.
CMB-13 RESEARCH ON CARBON AND GRAPHITE. REPORT NO. 22: SUMMARY OF PROGRESS, MAY 1--JULY 31, 1972.
M. C. Smith. Mar 73, 21p
Contract W-7405-eng-36

Descriptors: (*Graphite, *Ablation), (*Carbon, *Binders), Additives, Alcohols, Anisotropy, Bonding, Cracks, Crystal structure, Density, Fabrication, Grain size, High temperature, Impregnation, Liquids, Organometallic compounds, Petroleum products, Phenols, Physical properties, Resins, Tables, Tar, Testing, Thermal conductivity, Very high temperature.

For abstract, see NSA 28 04, number 08785.

ORO-4202-1/GA PC$3.00/MF$1.45
Tennessee Univ., Knoxville. Dept. Of Physics.
CONTINUATION OF MEASUREMENT OF THIRD-ORDER ELASTIC CONSTANTS OF SOLIDS. FINAL TECHNICAL REPORT.
M. A. Breazeale. May 73, 3p
Contract AT(40-1)-4202

Descriptors: (*Solids, *Elasticity), (*Silicon oxides, Elasticity), Research programs.

For abstract, see NSA 28 04, number 10607.

11C. Coating, Colorants, and Finishes

AD-767 728/9GA PC$5.50/MF$1.45
Solar San Diego Calif
HOT CORROSION RESISTANT ALUMINIDE COATINGS OF CONTROLLED COMPOSITION FOR NICKEL-BASE SUPERALLOYS.
Final rept. 15 Jan 71-9 Jul 73,
Victor S. Moore, and A. R. Stetson. Jul 73, 219p* Rept no. RDR-1702-3
Contract N00156-71-C-1020

Descriptors: (*Aluminum coating, Heat-resistant metals + alloys), (*Corrosion inhibition, Aluminum coating), (*Nickel alloys, Aluminum coatings), Slurry coating, Sintering, Aluminum alloys, Cobalt alloys, Chromium alloys, Additives, Acceptability, Turbine parts.
Identifiers: Aluminides, Nickel alloy Inconel 713C, Nickel alloy B-1900, Nickel alloy VIA.

The objective of the program was to develop and evaluate new application techniques and aluminide coatings of controlled composition for improved hot corrosion resistance of nickel-base superalloys. Three cast nickel-base alloys were included in the coating development program: Inco 713C, B1900 and TRW (or NASA) VIA. Procedures and techniques were developed for applying modified elements of known composition onto nickel-base alloys followed by aluminizing to form the beta NiAl aluminide. The modifying elements evaluated were Cr, Co, Y, La, Nd, Gd, Mischmetal, Ti, Zr, Si, Al2O3, MgO, Mo, W, Ta, and several combinations of the above refractory, reactive, and rare earth metals. A crucible sulfidation test (using 95Na2SO4-5NaCl) at 1750F was the principal screening test used during coating development. Oxidation tests at 1750F and 2000F and ballistic impact tests (followed by crucible sulfidation tests) were also used to screen the coatings. Final evaluation of selected coatings consisted of hot corrosion rig tests at 1650F and 1800F, tensile tests at room temperature, 1400F and 1800F, stress rupture testing at 1650F and 1800F and low-cycle fatigue tests at 1400F. (Modified author abstract)

N73-29555/2GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
EFFECTS OF DIFFUSION ON ALUMINUM DEPLETION AND DEGRADATION OF NIAL COATINGS.
J. L. Smialek, and C. E. Lowell. 1973, 16p NASA-TM-X-68274, E-7590
Conf-Proposed for Presentation at 144TH Natl. Meeting of the Electrochem. Soc., Boston, 7-11 Oct. 1973.

Descriptors: *Aluminum alloys, *Aluminum coatings, *Molecular diffusion, *Nickel alloys, Iridium, Oxidation, Surface diffusion.

For abstract, see STAR 1120

PATENT-3 706 621/GA Not available NTIS
Department of the Navy Washington D C
VACUUM PROCESS FOR APPLICATION OF SHEET COATINGS.
Patent,
Joseph Z. Lichtman. Filed 7 Jan 70, patented 19 Dec 72, 4p Rept nos. PAT-APPL-1 085,

Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Rubber coatings, *Patents), Protective treatments, Bonding, Erosion, Inhibition, Sheets, Synthetic rubber, Epoxy plastics, Vacuum apparatus.
Identifiers: Bonded coatings, PAT-CL-156-285.

The patent describes a process for applying erosion resistant coverings to surfaces of structures exposed to cavitation comprising the following steps: Pretreating a surface of the covering material which is in the form of a thin sheet, to improve its adhering properties; pretreating the surface of the material to be protected (substrate) to improve its adhering properties; heating the surface of the substrate; coating said cleaned surfaces with an adhesive of the epoxy-resin-type; applying the coated surface of the covering to the coated surface of the substrate; and maintaining, preferably by evacuation, close contact between the covering, adhesive and substrate while the adhesive cures.

PATENT-3 719 610/GA Not available NTIS
Department of the Navy Washington D C
LOW LOSS ELECTRICAL CONDUCTIVE COATING AND BONDING MATERIALS INCLUDING MAGNETIC PARTICLES FOR MIXING.
Patent,
Winslow W. Prentice. Filed 4 Aug 71, patented 6 Mar 73, 3p Rept nos. PAT-APPL-168 928,
Previously filed as PAT-APPL-783 976, 16 Dec 68.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Coatings, Electrical conductance), (*Patents, Coatings), Epoxy plastics, Silver, Copper, Nickel, Particles, Transducers, Bonding.
Identifiers: PAT-CL-252-513.

The patent describes a conductive coating and bonding material for single element electrostrictive transducers and for those formed as a mosaic stack, or non-linear seriatim assembly of electrostrictive segments. The composition is a mixture of silver flakes and copper flakes in a matrix of any one of various commercially marketed room temperature curing epoxy resins. In addition to the silver flakes and copper flakes the composition also includes nickel powder which serves as an agent for stirring the mixture. The term electrostrictive is used in the generic sense to encompass ceramic materials and piezoelectric natural or grown crystals.

FB-224 211/3GA PC$3.75/MF$1.45
National Swedish Inst. for Building Research, Stockholm.
TEST METHODS FOR THE MECHANICAL PROPERTIES OF PAINTS AND VARNISHES.
Building research,
Vivi-Ann Hammarback, Erik Strom, and Ulf Ulfvarson. 1973, 100p* D2:1973
Paper copy also available from: Svensk Byggtjanst, Box 1403, S-11184 Stockholm (Sweden). Price Sw. Kr. 20.

Descriptors: (*Paints, *Tests), (*Varnishes, *Tests), Mechanical properties, Temperature, Precision, Reproducibility, Extensibility, Abrasion resistance, Tensile properties, Elastic properties, Adhesion, Hardness, Impact strength, Sweden.

A total of 16 methods used for the testing of the mechanical properties (hardness, extensibility - ductility, scratch resistance, adhesion, impact resistance, resistance to dry abrasion) of paints and varnishes were tested on 26 different paints and varnishes in order to ascertain their dispersions and selectivities, the influence of temperature and the relations between the results of tests for the same or different properties, and in order to obtain an outline of values to be expected in testing commerical paints and varnishes. The methods for hardness and extensibility are generally acceptable while the other methods must be challenged for different reasons. Temperature exerts a fairly considerable influence on the results of determinations. A smaller test was also performed in order to determine the properties of free films in a tensile testing machine.

SGAE-2099/GA PC$3.25/MF$1.45
Oesterreichische Studiengesellschaft fuer Atomenergie G.M.B.H., Seibersdorf.
OPTICAL DETERMINATION OF THE ANISOTROPY OF PYROCARBON COATINGS.
P. Koss, and K. Koizlik. Feb 73, 22p CONF-720475-1
U.S. Sales Only.

Descriptors: (*Pyrolytic carbon, Anisotropy), (*Anisotropy, *Measuring methods), (*Protective coatings, Anisotropy), Coated fuel particles, Crystal structure, Graphite, Interactive display devices, Monocrystals, Optical properties, Polarization, Reflection, Visible radiation.

For abstract, see NSA 28 05, number 11341.

11D. Composite Materials

AD-767 671/1GA PC$7.00/MF$1.45
Naval Postgraduate School Monterey Calif
ELASTIC-PLASTIC ANALYSIS OF UNIDIRECTIONAL COMPOSITE UNDER LONGITUDINAL SHEAR.
Master's thesis,
Jacob Frank Wechselberger. Jun 73, 97p

Descriptors: (*Composite materials, Failure(Mechanics)), Plasticity, Computer programs, Numerical analysis, Aluminum alloys, Boron, Epoxy plastics, Reinforced plastics, Fibers, Theses.
Identifiers: Finite element analysis, *Oriented fiber composites, Boron reinforced composites, Boron reinforced plastics, Aluminum matrix composites, Epoxy matrix composites.

The failure point of a unidirectional composite subjected to longitudinal shear loading is calculated. The method of analysis is based on the finite element technique, the incremental plasticity relations of Prandtl-Reuss, and the von Mises yield criterion. The failure point for a boron-aluminum composite and a boron-epoxy composite were computed to determine the effect of the matrix material on the composite. (Author)

AD-767 706/5GA PC$14.50/MF$1.45
General Dynamics Fort Worth Tex Convair Aerospace Div
STUDY OF STRUCTURAL CRITERIA FOR COMPOSITE AIRFRAMES. VOLUME I. EVALUATION.
Final technical report,
Sherrill D. Manning, and Glen H. Lemon. Apr 73, 247p AFFDL-TR-73-4-Vol-1
Contract F33615-72-C-1066
See also Volume 2, AD-767 707.

Descriptors: (*Composite materials, Mechanical properties), (*Airframes, Composite materials), Laminates, Airplane panels, Fracture(Mechanics), Fatigue(Mechanics), Bolted joints, Brittleness, Defects(Materials), Anisotropy, Loading(Mechanics).
Identifiers: Design criteria, Structural design.

Criteria and design practices currently used for aircraft structures are examined and evaluated for applicability to composite structures. Selected probabilistic or statistical rationales are also reviewed and evaluated for possible applications. From these studies a plan was developed for acquiring understanding and data from which structural criteria and design practices applicable to composite airframes may be written. The basic characteristics of filamentary composites that are unique in comparison to those of metals are defined and explored. Special areas investigated include laminates, joints, and cutouts. (Modified author abstract)

AD-767 707/3GA PC$13.50/MF$1.45
General Dynamics Fort Worth Tex Convair Aerospace Div
STUDY OF STRUCTURAL CRITERIA FOR COMPOSITE AIRFRAMES. VOLUME II. CURRENT/CRITERIA/SELECTED RATIONALE REVIEW AND EVALUATION.
Final technical rept.,
Sherrill D. Manning, Glen H. Lemon, and Innes Bouton. Apr 73, 229p AFFDL-TR-73-4-Vol-2
Contract F33615-72-C-1066
See also Volume 1, AD-767 706. Prepared in cooperation with Technology, Inc., Dayton, Ohio.

Descriptors: (*Composite materials, Mechanical properties), (*Airframes, Composite materials), Laminates, Airplane panels, Fracture(Mechanics), Fatigue(Mechanics), Bolted joints, Brittleness, Defects(Materials), Anisotropy, Loading(Mechanics).
Identifiers: Design criteria, Structural design.

Criteria and design practices currently used for aircraft structures are examined and evaluated for applicability to composite structures. Selected probabilistic or statistical rationales are also reviewed and evaluated for possible applications. From these studies a plan was developed for acquiring understanding and data from which structural criteria and design practices applicable to composite airframes may be written. The basic characteristics of filamentary composites that are unique in comparison to those of metals are defined and explored. Special areas investigated include laminates, joints, and cutouts. The structural criteria derived from metallic structure experiences are not applicable to composite structure because the critical interaction of a low strain to failure material with structural complexity is not recognized; universal requirements and rigid design practices irrespective of material, design concept or manufacturing methods, or size effects are imposed, and an assumption of translation of residual strength and lifetime allowables from the material level to the component level, which is incompatible with observed composite behavior is imposed. Accelerated test procedures have not been developed successfully; therefore, near-term composite designs should be developed using a realistic random load and environment simulation. In order to achieve the necessary confidence in structural integrity, the composite design should acknowledge fleet size, reliability goals, structural complexity, scaling from test specimen-to-component level. (Modified author abstract)

AD-767 724/8GA PC$3.50/MF$1.45
Artech Corp Falls Church Va
EVALUATION OF MULTILAYER THIN FILMS.
Final rept. 9 May-27 Aug 73 on Phase 4,
Fred Ordway, and James R. Graves. Sep 73, 26p,
Rept no. J7114.10-FR
Contract DAAK02-72-D-0223
See also report on Phase 3 dated Mar 73, AD-757 723.

Descriptors: (*Laminates, *Films), Aluminum, Carbon, Tensile properties, Vapor plating, Vacuum apparatus, Deposition, Test methods.
Identifiers: *Thin films.

Multilayer thin-film composites of carbon-aluminum were prepared by vacuum evaporation of alternating layers a few hundred Angstroms thick. Up to 94 pairs of successive layers were deposited to produce composite films up to 12.5 micrometers (0.0005 in.) thick. The specimens were evaporated through a photoetched metal mask to produce a 'dogbone' shape for tensile testing, and were suc-

cessfully removed without breakage by applying a thin release film of gold to the glass substrate before deposition of the composite and wetting the gold film with a small quantity of mercury afterward. A method is proposed by which the true tensile strength of the composite may be determined. (Modified author abstract)

AD-767 864/2GA Not available NTIS
Deutsche Forschungs-Und Versuchsanstalt Fuer Luft-Und Raumfahrt E V Porz-Wahn (West Germany)
WHISKER ALS VERSTAERKUNGSKOMPONENTE VON VERBUNDWERKSTOFFEN, VERFAHRENSTECHNISCHE METHODEN ZUR AUSRICHTUNG (WHISKER REINFORCEMENT OF COMPOSITE MATERIALS: ALIGNMENT PROCEDURES),
J. Geiger, and J. Fueller. 1972, 9p Rept no. DFVLR-Sonderdruck-264
Text in German.
Availability: Pub. in Kunststoff-Rundschau, v19 n12 p647-653 1972.

Descriptors: (*Composite materials, Whiskers(Crystals)), Silicon carbides, Alignment, West Germany.
Identifiers: *Oriented fiber composites.

AD-767 991/3GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
PHYSICAL AND MECHANICAL PROPERTIES OF STRUCTURAL GLASS-FIBER MATERIAL WITH AIR HARDENING,
V. E. Gaidachuk, V. I. Timoshchenko, A. F. Pilnik, and V. V. Kirichenko. 6 Sep 73, 18p Rept no. FTD-HT-23-810-73
Edited trans. of Samoletostroenie i Tekhnika Vozdushnogo Flota (USSR) n28 p84-92 1972, by Louise E. Heenan.

Descriptors: (*Reinforced plastics, Airframes), (*Composite materials, Airframes), Glass textiles, Epoxy plastics, Mechanical properties, USSR.
Identifiers: *Fiberglass reinforced plastics, Epoxy matrix composites, Translations.

Studies were made on the physical and mechanical properties of specimens of structural glass-fiber material used in the construction of a test fuselage for the AN-2m aircraft. The material was made from glass fabric ASTT (b)-C sub 1 (MRTU6M814-61), impregnated with epoxy thiocol bonding K-153. As a hardener the authors used polyethylenepolyamine (10% bonding weight). The content of bonding in the glass-fiber material was 40 plus or minus 3% with respect to volume. The material was prepared by vacuum molding at a pressure of 0.7 atm for 10 h; the billet was held no less than a month under normal conditions.

AD-768 211/5GA PC$3.75/MF$1.45
General Electric Co Philadelphia Pa Space Div
INVESTIGATION OF ELECTRONIC CERAMIC FIBERS FOR NON-DESTRUCTIVE EVALUATION OF ADVANCED COMPOSITES.
Final rept. 16 Feb 72-30 Jun 73,
D. R. Ulrich, E. C. Henry, and H. W. Rauch, Sr. 30 Jul 73, 94p*
Contract N00019-72-C-0285

Descriptors: (*Composite materials, *Nondestructive testing), Ceramic fibers, Reinforced plastics, Electrical properties, Ferrites, Ferroelectric crystals, Filaments, Potassium compounds, Sodium compounds, Niobates, Lithium compounds, Lead compounds, Zirconates, Titanates, Germanium compounds, Silicates, Glass, Crystallization.
Identifiers: Potassium sodium niobates, Lithium niobates, Lead germanates, Lead titanate zirconates.

The objective was to investigate the feasibility of developing and using crystal-bearing filaments as sensors in the non-destructive evaluation of fiber-reinforced plastic structural materials. The fibers or filaments contain crystalline oxidic materials commonly referred to as electronic ceramics. Compositions investigated include ferroelectric potassium sodium niobate, lithium niobate, lead germanate, lead germanium silicate, lead zirconate titanate, and a magnetic ferrite. These electronic ceramic compositions were dissolved in compatible molten glass, shaped, annealed, and cooled to room temperature. The test shapes (filaments and disks) were then heat-treated to precipitate (exsolve) the material that had been put in solution. Progress is reported in the preparation and processing of these materials. Devitrified filaments were incorporated into test composites, with an epoxy-novalac matrix, and were subjected to preliminary electrical measurements. The effects of glass content and microstructure on electrical properties are reported. (Author)

AD-768 225/5GA PC$14.75/MF$1.45
General Electric Co Philadelphia Pa Re-Entry and Environmental Systems Div
ADVANCED HARDENED ANTENNA WINDOW MATERIALS STUDY. III.
Final rept. 19 May 72-19 Apr 73,
James P. Brazel. Jul 73, 253p AMMRC-CTR-73-26
Contract DAAG46-72-C-0173
See also AD-741 384.

Descriptors: (*Composite materials, Hardening), (*Guided missile windows, *Guided missile antennas), Reentry vehicles, Heat shields, Quartz, Silicon dioxide, Silanes, Boron compounds, Nitrides, Silicone plastics, Pyrolysis, Radio transmission, Mechanical properties, Antenna components, Deposition, Ceramic fibers.
Identifiers: *Woven fiber composites, Chemical vapor deposition, *Antenna windows, Silicon dioxide reinforced composites, Silicon dioxide matrix composites.

The development and characterization of the ADL-10 composite hardened antenna window (fused silica Omniweave) reinforcement/SR-350 methyl silicone resin matrix) was completed. A variety of methods for densification of silica Omniweaves to inorganic RF transmitting composites was studied and compared. These included multiple impregnations and pyrolyses with SR-350 (the Markite process), pyrolysis of a silane resin, densification with Ludox colloidal silica sols, chemical vapor deposition of silica and boron nitride, and a series of glass-bonded boron nitride matrices. Two of these approaches yielded promising composites: ADL-4D6, from the colloidal silica matrix in both a 4-D and 5-D reinforcement design; and BNQ, the glass-bonded boron nitride matrix composite with 4-D Omniweave. The report contains data on flexure and tensile strengths and elastic properties, flyer plate shock impact testing by both aluminum and mylar flyers, RF/dielectrics, ultrasonic and radiographic NDT, thermal conductivity and ablation testing. An analytic section compares the structural properties of 3-D, 4-D and 5-D composites of silica-silica and silica-silicone. (Modified author abstract)

AERE-R-7296/GA PC$3.00/MF$1.45
Atomic Energy Research Establishment, Harwell (England).
EFFECT OF RESIN MATRIX PROPERTIES ON THE IMPACT AND MECHANICAL PROPERTIES OF UNIDIRECTIONAL CFRP.
N. L. Hancox, and H. Wells. Mar 73, 15p
U.S. Sales Only.

Descriptors: (*Epoxides, *Additives), (*Reinforced plastics, *Mechanical properties), Carbon, Composite materials, Filaments, Impact strength, Rubbers, Shear properties.

For abstract, see NSA 28 05, number 12492.

BDX-613-827/GA PC$4.25/MF$1.45
Bendix Corp., Kansas City, Mo.
FILAMENT-WINDING A THIN-WALL FIBERGLASS HEMISPHERE.
D. C. Bruegge. Mar 73, 44p
Contract AT(29-1)-613

Descriptors: (*Reinforced plastics, *Fabrication), (*Composite materials, *Tensile properties), Additives, Configuration, Epoxides, Filaments.

For abstract, see NSA 28 05, number 12493.

BNL-17555/GA PC$4.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
GLASS--POLYMER COMPOSITES.
M. Beller, and M. Steinberg. Jan 73, 25p

Descriptors: (*Composite materials, *Solid wastes), Cost, Glass, Pipes, Polymerization, Polymers.

For abstract, see NSA 28 04, number 10513.

COO-1794-13/GA PC$5.45/MF$1.45
Illinois Inst. Of Tech., Chicago.
STRENGTHENING AND TOUGHENING OF BRITTLE MATERIALS. PROGRESS REPORT, JANUARY 31, 1972--JANUARY 31, 1973.
L. J. Broutman, and P. K. Mallick. 59p
Contract AT(11-1)-1794

Descriptors: (*Composite materials, *Mechanical properties), Brittleness, Epoxides, Filaments, Glass, Potassium oxides, Spheres, Surface treatments, Titanium oxides.

For abstract, see NSA 28 04, number 10556.

COO-1794-16/GA PC$7.60/MF$1.45
Illinois Inst. Of Tech., Chicago.
MICROMECHANICS ANALYSIS OF COMPOSITE MATERIALS USING FINITE ELEMENT METHODS.
B. D. Agarwal. May 72, 160p
Contract AT(11-1)1794

Descriptors: (*Composite materials, *Stress analysis), Elasticity, Filaments, Finite element method, Interfaces, Particles, Spheres.

For abstract, see NSA 28 04, number 10557.

LA-5147/GA PC$5.45/MF$1.45
Los Alamos Scientific Lab., N. Mex.
SPECIAL GRAPHITES AND CARBIDE-GRAPHITE COMPOSITES DEVELOPED AT LASL.
R. E. Riley. Apr 73, 64p
Contract W-7405-eng-36

Descriptors: (*Graphite, Composite materials), (*Tantalum carbides, Composite materials), (*Composite materials, *Microstructure), (*Niobium carbides, Composite materials), Compacting, Fabrication, Fractures, Hot pressing, Powder metallurgy, Reinforced materials, Thermal stresses, Thermodynamic properties.

For abstract, see NSA 28 06, number 13119.

LA-5173/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
PARTICULATE COMPOSITE MATERIALS TECHNOLOGY.
R. E. Riley, and J. M. Taub. May 73, 9p
Contract W-7405-eng-36

Descriptors: (*Tungsten alloys, *Mechanical properties), (*Nickel alloys, Mechanical properties), (*Iron alloys, Mechanical properties), (*Rhenium alloys, Mechanical properties), Composite materials, Microstructure, Flexural strength, Niobium carbides, Tantalum carbides, Thermal shock, Hafnium carbides, Hafnium oxides, Thermal conductivity, Uranium dioxide, Zirconium carbides, Zi

conium oxides, Absorption, Boron carbides, Copper alloys, Neutron beams, Sheets.

For abstract, see NSA 28 05, number 11132.

N73-29557/8GA PC$7.25/MF$1.45
United Aircraft Corp., East Hartford, Conn. Research Labs.
FABRICATION OF ALUMINUM-CARBON COMPOSITES.
Final Report.
R. C. Novak. Aug 73, 104p NASA-CR-121266, M911326-13
Contract NAS3-15704

Descriptors: *Aluminum carbides, *Composite materials, Carbon compounds, Creep rupture strength, Fabrication, Thermal expansion.

For abstract, see STAR 1120

N73-29935/6GA PC$8.75/MF$1.45
Princeton Univ., N.J. Dept. of Aerospace and Mechanical Sciences.
A CRITICAL SURVEY OF WAVE PROPAGATION AND IMPACT IN COMPOSITE MATERIALS.
F. C. Moon. May 73, 133p NASA-CR-121226, AMS-1103
Contract NGR-31-001-267
Subm-Submitted for Publication.

Descriptors: *Composite materials, *Impact loads, *Stress waves, *Wave propagation, Anisotropy, Dissipation, Shock waves.

For abstract, see STAR 1120

N73-29936/4GA PC$3.50/MF$1.45
Lehigh Univ., Bethlehem, Pa. Inst. of Fracture and Solid Mechanics.
INTERACTION BETWEEN PARALLEL CRACKS IN LAYERED COMPOSITES.
M. Ratwani, and G. D. Gupta. Mar 73, 26p NASA-CR-132287, NASA-TR-73-6
Contracts NGR-39-007-011, NSF GK-11977

Descriptors: *Composite materials, *Cracks, *Laminates, Collinearity, Composite structures.

For abstract, see STAR 1120

N73-29945/5GA PC$4.50/MF$1.45
Grumman Aerospace Corp., Bethpage, N.Y.
BUCKLING BEHAVIOR OF COMPOSITE CYLINDERS SUBJECTED TO COMPRESSIVE LOADING.
R. L. Carri. Jun 73, 48p NASA-CR-132264
Contract NAS1-11817

Descriptors: *Buckling, *Composite materials, *Compressive strength, *Orthotropic cylinders, Boron compounds, Compression loads, Correlation, Titanium borides.

For abstract, see STAR 1120

ORO-3947-10/GA PC$3.00/MF$1.45
Texas Univ., Austin. Materials Science Lab.
ELEVATED TEMPERATURE MORPHOLOGICAL STABILITY OF METAL MATRIX FIBER COMPOSITES. PROGRESS REPORT, FEBRUARY 1, 1972--JANUARY 31, 1973.
T. H. Courtney. Feb 73, 20p

Descriptors: (*Composite materials, *Stability), (*Lead alloys, Stability), (*Tin alloys, Stability), (*Aluminium alloys, Stability), Eutectics, Filaments, Instability, Intermetallic compounds, Lamellae, Nucleation, Shape, Deformation, Rolling, Nickel alloys.

For abstract, see NSA 28 04, number 10606.

SC-DC-721644/GA PC$3.75/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
NONDESTRUCTIVE MEASUREMENT OF THE ELASTIC CONSTANTS OF UNIDIRECTIONAL BORSIC FIBER REINFORCED ALUMINUM COMPOSITES.
J. H. Gieske, and R. E. Allred. Mar 73, 35p CONF-730511-2

Descriptors: (*Aluminium, *Elasticity), (*Boron, Elasticity), (*Silicon carbides, Elasticity), (*Composite materials, Elasticity), Fibers, Ultrasonic testing.

For abstract, see NSA 28 05, number 11340.

SLA-73-385/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
APPLICATION OF ENGINEERING DATA ON CARBON FIBERS TO CARBON/CARBON COMPOSITES.
B. L. Butler. May 73, 19p

Descriptors: (*Carbon, *Composite materials), Filaments, Mechanical properties, Pyrolytic carbon, Tensile properties, Young modulus.

For abstract, see NSA 28 06, number 13364.

11E. Fibers and Textiles

PATENT-3 711 351/GA Not available NTIS
Department of the Navy Washington D C
METHOD OF IMPREGNATING INORGANIC FILAMENT STRANDS.
Patent,
James R. Griffith. Filed 9 Sep 70, patented 16 Jan 73, 4p Rept nos. PAT-APPL-70 808,
Previously filed as PAT-APPL-643 321, 31 May 67.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Glass textiles), (*Laminated glass, Epoxy plastics), (*Glass textiles, *Impregnation), (*Thermoplastics, Glass textiles), Filament wound construction, Plastic coatings, Interfaces, Condensation reactions, Amines.
Identifiers: Acyl halides, PAT-CL-156-175.

The patent describes a process in which glass filaments are continuously drawn through a solution of bifunctional acyl chloride in organic solvent and then directly through a solution of alkylene diamine and an acid acceptor in water. The filaments are dried, coated with epoxy resin and wound to form a structural laminate.

PATENT-3 711 586/GA Not available NTIS
Department of the Navy Washington D C
METHOD OF INCREASING TENSILE STRENGTH OF PLASTIC MATERIALS.
Patent,
James S. Muraoka. Filed 18 Mar 71, patented 16 Jan 73, 3p Rept nos. PAT-APPL-125 827,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Cordage), (*Cordage, Polyethylene plastics), (*Polyethylene plastics, Tensile properties), Fibers(Synthetic), High-pressure research.
Identifiers: PAT-CL-264-88, *Polyethylene rope, Polypropylene fibers, Hydrostatic pressure.

The patent describes plastic ropes composed of polyethylene and polypropylene strands. Exposure to high hydrostatic pressure materially increases in tensile strength without a corresponding increase in strand diameter.

11F. Metallurgy and Metallography

AD-767 772/7GA Reprint
Battelle Columbus Labs Ohio
SOME RELATIONSHIPS BETWEEN THE ELECTRONIC AND MECHANICAL PROPERTIES OF TI ALLOYS, DISCUSSED FROM THE STANDPOINT OF FUNDAMENTAL ALLOY THEORY,
E. W. Collings, J. E. Enderby, H. L. Gegel, and J. C. Ho. 1973, 15p AFOSR-TR-73-1755
Contract F33615-69-C-1594, Grant AF-AFOSR-2084-71
Prepared in cooperation with Leicester Univ. (England) and Wichita State Univ., Kans. Dept. of Physics.
Availability: Pub. in Titanium Science and Technology, v2 p801-814 1973.

Descriptors: (*Titanium alloys, Mechanical properties), Atomic structure, Band theory of solids.
Identifiers: Solid solution strengthening.

The results of two general theories, which when taken together enable the structure-dependence of the cohesive energy of an alloy to be related to the electronic structures (atomic and band) of the pure constituents, are applied in a discussion of solid solution strengthening in alpha-stabilized and beta-stabilized Ti-base alloys. (Author)

AD-767 780/0GA PC$3.50/MF$1.45
Stanford Research Inst Menlo Park Calif
DEVELOPMENT OF ULTRAHIGH-STRENGTH, DUCTILE TITANIUM ALLOYS BY THERMOMECHANICAL PROCESSING AND TRANSFORMATION-INDUCED PLASTICITY.
Final rept. 1 Mar 72-31 May 73,
Robin L. Jones. Jun 73, 57p*
Contract N00019-72-0201

Descriptors: (*Titanium alloys, Mechanical properties), Plasticity, Tensile properties, Toughness, Heat treatment, Microstructure, Fracture(Mechanics), Yield point, Ductility, Aluminum alloys, Tin alloys, Vanadium alloys, Zirconium alloys.
Identifiers: Titanium alloy 2Al 2Sn 11V 11Zr.

This report summarizes the results obtained during the third year of a program aimed at the development of high strength titanium alloys showing enhanced ductility and toughness due to the occurrence of deformation-induced phase transformation. Binary alloys of titanium with the beta-eutectoid solutes iron, manganese, and chromium were investigated during the first half of this program. The second half of the program was devoted to an investigation of the deformation-induced transformation behavior and mechanical properties of alloys based on Transage 129 (Ti-2Al-11V-2Sn-11Zr). Marked transformation-induced plasticity (TRIP) behavior was observed for the experimental alloys in a beta-annealed condition, especially when the V:Al content ratio was reduced below 5.5. When the alloys were aged to increase the yield strength the TRIP behavior disappeared, although deformation-induced transformation still occurred in some instances. The reasons for this behavior are discussed in the report and it is concluded that a high yield strength and TRIP behavior are mutually exclusive in these alloys, since both depend on the same strengthening mechanism. (Modified author abstract)

AD-767 792/5GA PC$3.00/MF$1.45
Liverpool Univ (England) Dept of Metallurgy and Materials Science
HOT CORROSION OF GAS TURBINES.
Interim scientific rept. 15 May 72-14 May 73,
John Stringer, M. E. El-Dahshan, and D. P. Whittle. 14 Jul 73, 13p EOARD-TR-73-22
Grant AF-AFOSR-2388-72

Descriptors: (*Corrosion, *Gas turbines), (*Nickel alloys, Corrosion), Sulfur, Oxidation, Cobalt alloys, Nickel compounds, Sulfides, Chromium alloys, Aluminum alloys, Molybdenum alloys, Microstructure, Great Britain.
Identifiers: Nickel alloy 15 Cr, Nickel alloy 3Al 15Cr, Nickel alloy 15Cr 3Mo, Nimonic 105, Nickel alloy PK33.

Discrepancies between early hot-corrosion models based on sulphidation and more recently reported data obtained by a molten salt fluxing technique are discussed. The hot corrosion role of sulphur in the absence of salt was tested by presulphidizing specimens at high and low sulphur partial pressures and then oxidizing them. Results show that certain features of the practical hot corrosion reaction are not well-modeled by the salt-fluxing model and that sulphur played a more important part than predicted. (Author)

AD-767 853/5GA Reprint
Massachusetts Inst of Tech Cambridge Dept of Mechanical Engineering
SPATIAL DISTRIBUTIONS OF H2 DESORBED FROM FE, PT, CU, NB, AND STAINLESS STEEL SURFACES,
T. L. Bradley, and R. E. Stickney. 22 Feb 73, 14p
Contracts DA-28-043-AMC-0536(E), DAHC15-67-C-02221
Availability: Pub. in the Surface Science, v38 p313-326 1973.

Descriptors: (*Hydrogen, Metals), (*Degasification, Metals), Diffusion, Iron, Platinum, Copper, Niobium, Stainless steel, Surface properties, Impurities.
Identifiers: Auger electron spectroscopy, Steel 304, Desorption.

The spatial distributions of H2 molecules desorbed from polycrystalline Fe, Pt, Cu, Nb and stainless steel (type 304) surfaces were measured with a rotatable ionization gauge. Prior to cleaning the surfaces by ion bombardment or by oxidation, the AES (Auger electron spectroscopy) spectra indicated that all of the sample surfaces were highly contaminated. (S, C, and P were the predominant impurities). The spatial distributions measured under these conditions were considerably narrower than the commonly-assumed diffuse distribution. As the surfaces were cleaned, the spatial distributions for Fe, Pt, and Nb tended to become diffuse, which is consistent with the trend observed previously for polycrystalline and single-crystal Ni. Copper proved to be an exception to this trend, since its distribution was far from being diffuse when the surface appeared to be clean. It is suggested that this unusual characteristic of Cu is a consequence of an activation energy barrier associated with the dissociative adsorption of hydrogen on Cu. (Modified author abstract)

AD-767 924/4GA PC$3.50/MF$1.45
Naval Research Lab Washington D C
CORROSION CHARACTERIZATION AND RESPONSE TO CATHODIC PROTECTION OF EIGHT WIRE-ROPE MATERIALS IN SEA WATER.
Final rept.,
T. J. Lennox, Jr., R. E. Groover, and M. H. Peterson. 12 Sep 73, 55p* Rept no. NRL-7584

Descriptors: (*Corrosion, *Wire), (*Cordage, Corrosion), Cathodic protection, Bronze, Titanium alloys, Stainless steel, Zinc coatings, Aluminum coatings, Titamium alloys, Copper, Nickel, Cladding, Aluminum alloys, Chromium alloys, Vanadium alloys, Sea water, Nickel alloys.
Identifiers: Phosphor bronzes, Titanium alloy 3Al 11Cr 13V, Steel 304.

The corrosion behavior and response to cathodic protection from zinc anodes have been studied on eight wire-rope materials during 790 days exposure in sea water at the NRL Marine Corrosion Research Laboratory, Key West, Florida. The titanium alloy 13V-11Cr-3Al, the nickel-base alloy, and the aluminized steel were inherently corrosion resistant. Based solely on corrosion resistance, their use would be suitable for two years total immersion in sea water even without cathodic protection. Unprotected phosphor bronze, galvanized steel, and copper-nickel clad stainless steels are not suitable for extended use in sea water. Phosphor bronze and galvanized steel would be satisfactory for long-term service if cathodically protected. The 90/10 copper-nickel clad Type 304L stainless steel was essentially corrosion free when cathodically protected. Pitting was not eliminated on unclad Type 304L stainless steel even when cathodically protected. The 90/10 copper-nickel clad Tyep 205 stainless steel showed localized corrosion on some of the wires when cathodically protected with a zinc anode. (Modified author abstract)

AD-767 948/3GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
DIFFUSION AND NONDIFFUSION TRANSFORMATIONS OF METASTABLE PHASES IN TITANIUM (A + B) ALLOYS,
E. I. Guskova, and M. I. Ermolova. 4 Oct 73, 15p Rept no. FTD-HT-23-126-74
Edited trans. of mono. Novyi Konstruktsionny Material-Titan, n.p., 1972 p56-63, by Paul J. Reiff.

Descriptors: (*Titanium alloys, *Phase studies), Diffusion, Aluminum alloys, Chromium alloys, Molybdenum alloys, Vanadium alloys, Niobium alloys, USSR, Solid state physics.
Identifiers: Titanium alloy 30N6, Translations.

The study concerns four groups of metastable phases differentiated by their crystalline structure and concentration of beta-stabilizing elements in titanium alloys with transition metals. The transition mechanism of certain of the metastable phases cannot be fully explained at the atomic level solely on the basis of the pecularities of atom packing in the crystal lattice. In a first approximation, pictures of localized (responsible for the covalent bond) and nonlocalized (responsible for the metallic bond) electrons are useful; the change in the ratio between these electrons determines the extent of phase metastability and other properties of alloys based on transition metals.

AD-767 981/4GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
THE INFLUENCE OF STRUCTURE AND CONCENTRATION OF STRESSES ON THE MECHANICAL PROPERTIES OF ALLOYS OF THE TI-TA-MO SYSTEM,
V. S. Mikheev, P. N. Nikitin, and P. F. Koshleev. 21 Sep 73, 10p Rept no. FTD-HT-23-139-74
Edited trans. of mono. Novyi Konstruktsionny Material - Titan, n.p., 1972 p115-117, by Edwin P. Pentecost.

Descriptors: (*Titanium alloys, Mechanical properties), Tantalum alloys, Molybdenum alloys, Temperature, Stresses, Toughness, Tensile properties, Crack propagation, USSR.
Identifiers: Translations.

The authors examined the mechanical properties and the sensitivity to concentration of stresses of alloys of the Ti-Ta-Mo system which contain 1.6, 4.8, and 8.0 Ta and Mo with a ratio of Ta: Mo = 1:1 in a temperature range of from plus 20 to minus 253 degrees. An alloy with an alpha solid solution structure is highly plastic at low temperatures, and two-phase alpha + beta alloys with a small amount of dispersion beta phase possess a sufficient reserve of ductility with high strength.

AD-767 997/0GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
EFFECT OF HEATING RATE ON THE PHASE COMPOSITION OF VT3-1 ALLOY,
F. L. Lokshin, R. G. Koknaev, A. I. Gordienko, N. S. Suslova, and A. S. Fridman. 18 Sep 73, 9p Rept no. FTD-HT-23-131-74
Edited trans. of mono. Novyi Konstruktsionny Material--Titan, n.p., 1972 p78-80, by Paul J. Reiff.

Descriptors: (*Titanium alloys, *Phase studies), Heating, USSR.
Identifiers: Critical point, Translations.

AD-767 999/6GA PC$2.75/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
A VACUUCHAMBER,
A. I. Mayorov, Ya. M. Levin, V. I. Reshetov, I. A. Molotov, and V. I. Chechetkin. 19 Sep 73, 6p Rept no. FTD-HT-23-244-74
Edited trans. of Patent (USSR) 335 291 pl-2, 11 Apr 72, by Paul J. Reiff.

Descriptors: (*Vacuum apparatus, Refining(Metallurgy)), Containers, Patents, USSR.
Identifiers: Vacuum chambers, Translations.

The patent describes a vacuum chamber for batch evacuation of a liquid metal, consisting of a pyriform lined steel housing with a bottom sleeve for metal intake and an aperture on top for gas removal. To reduce the temperature of the evacuated gases, the chamber is equipped with an air-tight cap in whose hollow a cooling coil is placed. The cap covers the upper portion of the chamber and has an aperture for gas evacuation.

AD-768 046/5GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
CRITICAL SURVEY OF INVESTIGATIONS OF THE EQUILIBRIUM DIAGRAM OF THE TI-W SYSTEM,
I. I. Kornilov, T. T. Nartova, and S. V. Oleinikova. 18 Sep 73, 8p Rept no. FTD-HT-23-119-74
Edited trans. of mono. Novyi Konstruktsionny Material-Titan, 1972 p16-19, by Paul J. Reiff.

Descriptors: (*Titanium alloys, *Phase studies), (*Tungsten alloys, Phase studies), Microstructure, USSR.
Identifiers: Translations.

The study results in a conclusion concerning the existence of a continuous solid solution between beta-titanium and tungsten at high temperatures. Divergence in the conclusions of different authors is explained by the insufficient homogeneity of the cast alloys and the effect of admixtures on the structure of these alloys.

AD-768 048/1GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
SPECIAL FEATURES OF THE DESTRUCTION OF ALPHA-ALLOYS OF TITANIUM AT HIGH TEMPERATURES,
L. Z. Moroz, and S. S. Ushkov. 4 Oct 73, 13p Rept no. FTD-HT-23-142-74
Edited trans. of mono. Novyi Konstruktsionny Material--Titan, 1972 p124-130, by Paul J. Reiff.

Descriptors: (*Titanium alloys, *Fracture(Mechanics)), Temperature, Defects(Materials), Plasticity, Grain boundaries, Deformation, Aluminum alloys, Chromium alloys, Tin alloys, Zirconium alloys.
Identifiers: Plastic deformation, Translations.

AD-768 054/9GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
INVESTIGATION OF THE BEHAVIOR OF 3.8% AL TITANIUM ALLOY DURING FRICTION,
I. V. Ashikhmina, and V. N. Goldfaiyn. 4 Oct 73, 11p Rept no. FTD-HT-23-141-74

Edited trans. of mono. Novyi Konstruktsionny Material Titan, 1972 p120-124, by Paul J. Reiff.

Descriptors: (*Titanium alloys, Friction), (*Wear resistance, Titanium alloys), Aluminum alloys, USSR.
Identifiers: Plastic deformation, Translations, Titanium alloy 3.8Al.

A study of the worn out parts of machines and mechanisms produces a general conclusion regarding the noticeable changes in the original structure and properties of the metal in direct proximity to the friction surface. This article is an attempt to describe the changes which unfold in the surface layers of titanium during friction and to compare these changes with a similar picture observed in other materials.

AD-768 055/6GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
PHASE TRANSFORMATIONS DURING THE HEAT TREATMENT OF ALLY VT18,
O. S. Korobov, K. M. Borzetsovskaya, Yu. M. Lebedev, N. M. Semenova, and L. A. Elagina. 21 Sep 73, 9p Rept no. FTD-HT-23-130-74
Edited trans. of mono. Novyi Konstruktsionny Material-Titan, 1972 p74-74, by Victor Mesenzeff.

Descriptors: (*Titanium alloys, Phase studies), Aluminum alloys, Heat treatment, Microstructure, Titanium compounds, Aluminum compounds, Hardening, Plasticity, USSR.
Identifiers: Translations.

The investigation, devoted to the study of phase and structural changes during hardening and tempering of alloy VT18, was carried out on rods obtained by extrusion. The rods were cut into blanks and heat-treated. Samples were cut from these blanks in order to study the microstructure and for X-ray and dilatometric analyses. The X-ray analysis was done on the URS-50IM diffractometer and in the RKD and KROS chambers in copper and nickel radiation. Dilatograms were obtained on the UVD vacuum dilatometer. The electron-microscope study was carried out on the UEMV-100 microscope, using the method of replicas.

AD-768 056/4GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
EFFECT OF TEMPERATURE ON THE PLASTICITY OF TITANIUM,
L. S. Moroz, and S. S. Ushkov. 18 Sep 73, 12p Rept no. FTD-HT-23-133-74
Edited trans. of mono. Novyi Konstruktsionny Material--Titan, 1972 p89-93, by Paul J. Reiff.

Descriptors: (*Titanium, *Plasticity), (*Titanium alloys, Plasticity), Temperature, Elongation, Aluminum alloys, Vanadium alloys, Zirconium alloys, USSR.
Identifiers: Plastic deformation, Titanium alloys 2v, Titanium alloys 8v Titanium alloy 6Zr, Titanium alloys 4Al, Translations.

The study of the temperature dependence of the plasticity of titanium and its alloys has attracted much attention. Nevertheless, dependence of relative elongation has not been explained. Relative elongation is widely used as a characteristic for evaluating quality of materials. Therefore investigating the effect of temperature on the amount of relative elongation and establishing the causes responsible for its temperature dependence are of considerable interest. (Author)

AD-768 057/2GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
STRUCTURAL TRANSFORMATIONS IN TWO-PHASE TITANIUM ALLOYS,
E. V. Polyak, and A. Yu. Sokolova. 18 Sep 73, 11p Rept no. FTD-HT-23-128-74
Edited trans. of mono. Novyi Konstruktsionny Material-Titan, n.p., 1972 p66-70, by Paul J. Reiff.

Descriptors: (*Titanium alloys, Mechanical properties), Phase studies, Defects(Materials), Plasticity, Microstructure, Heat treatment, USSR, Surface properties, Crystal structure.
Identifiers: Translations.

An electron microscope was used to study the kinetics of disintegration of metastable martensitic alpha prime- and beta--phases of two-phase titanium alloys. The results obtained established the connection between structural transformations and the mechanical properties of the alloys. The alpha prime-phase and kinetics of its disintegration were studied using a VT14 alloy following its quenching in water from the beta-region at 1000 degrees and subsequent aging in the 550-750 degree temperature interval.

AD-768 058/0GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
EFFECT OF ALLOYING COMPONENTS ON THE HYDROGEN ABSORPTION OF TITANIUM ALLOYS DURING ETCHING,
V. V. Usova, V. N. Modestova, and N. D. Tomashov. 28 Sep 73, 10p Rept no. FTD-HT-23-152-74
Edited trans. of mono. Novyi Konstruktsionny Material-Titan, n.p., 1972 p170-174, by Paul J. Reiff.

Descriptors: (*Titanium alloys, *Etching), (*Hydrogen, Titanium alloys), Absorption, Hydrochloric acid, Sulfuric acid, Fluorine compounds, Acids, Diffusion, USSR.
Identifiers: Translations, Hydrofluoric acid.

The paper discusses etching titanium and alloys of the Ti-Al system in solutions containing hydrochloric and sulphuric acid and in solutions containing hydrofluoric acid. Hydrogen absorption is established with respect to time. The presence of aluminum in titanium reduced its hydrogen absorption. Alloys with additional elements were found to have less hydrogen absorption than have binary alloys.

AD-768 127/3GA PC$3.50/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
NONDESTRUCTIVE CRACK DETECTION OF FATIGUED 1040 STEEL USING ANALOG TO DIGITAL METHODS,
Roger Mielec. May 73, 66p Rept no. USAMC-ITC-1-73-11

Descriptors: (*Steel, Non-destructive testing), (*Non-destructive testing, Vibration), (*Fatigue(Mechanics), Non-destructive testing), Cracks, Resonant frequency, Power spectra, Computer programs.
Identifiers: Steel 1040, Fatigue tests.

A study was made to investigate a method of non-destructive testing (NDT) as related to fatigue crack damage. Vibration techniques, a high speed fatigue testing machine, and a small digital computer were used to attain research objectives. The vibration analysis consisted of vibrating 1040 hot rolled steel fatigue specimens after periodically being dismounted from a fatigue testing machine. While being vibrated by mechanical means, the dynamic characteristics of the specimen with the fatigue cracks were recorded. (Author)

AD-768 151/3GA PC$2.75/MF$1.45
Army Materials and Mechanics Research Center Watertown Mass
TENSILE BEHAVIOR OF A DILUTE ALPHA TITANIUM ALLOY OF ULTRAFINE GRAIN SIZE.
Technical rept.,
V. Ramachandran, and Ernest P. Abrahamson, II. May 73, 15p Rept no. AMMRC-TR-73-24

Descriptors: (*Titanium alloys, Tensile properties), Grain size, Yield point, Age hardening, Temperature, Strain(Mechanics), Elongation.
Identifiers: Strain aging, Stress-strain diagrams.

A solid solution alpha titanium alloy was studied at two grain sizes (1 and 6 micrometers). The room temperature strength of the finer grain size material is approximately 50% greater than the coarser material. Studies of dynamic strain aging and work hardening rate as a function of grain size are reported. (Author)

AD-768 152/1GA PC$2.75/MF$1.45
Army Materials and Mechanics Research Center Watertown Mass
MECHANICAL BEHAVIOR OF AN ULTRAFINE GRAIN FERRITIC STEEL.
Technical rept.,
V. Ramachandran, and Ernest P. Abrahamson, II. Mar 73, 21p* Rept no. AMMRC-TR-73-14

Descriptors: (*Steel, Mechanical properties), Grain size, Creep, Deformation, Strain hardening, Tensile properties, Yield point, Temperature, Dislocations.
Identifiers: Stress strain diagrams.

The mechanical properties of a ferritic steel with grain size ranging from 0.42 to 8 micrometers has been investigated. The material shows a marked increase in plastic instability. Decreasing the grain size is shown to decrease the temperature range for dynamic strain aging. (Author)

AD-768 153/9GA PC$3.00/MF$1.45
Army Materials and Mechanics Research Center Watertown Mass
OXIDATION OF COLUMBIUM AND COATED COLUMBIUM ALLOYS.
Technical rept.,
Milton Levy, Joseph J. Falco, and Robert B. Herring. Jul 73, 29p* Rept no. AMMRC-TR-35

Descriptors: (*Niobium alloys, *Oxidation), Silicides, Coatings, Reaction kinetics, X-ray diffraction analysis, X-ray spectroscopy, Tungsten alloys, Tantalum alloys, Zirconium alloys, Niobium compounds, Tantalum compounds, Tungsten compounds, Zirconium oxides, Oxides, Pressure, Hardness, Electron microscopy, High-temperature research.
Identifiers: Niobium alloy SU-31, Niobium alloy FS-85, X ray fluorescence.

Oxidation of columbium alloys FS-85, SU-31, and a complex disilicide coating/SU-31 and FS-85 alloy systems has been studied in the temperature range 1400 to 2700 F at 1 atm and 50 Cm/sec flow rate of air. For studies of the uncoated alloys, the flow rate and pressure dependence of the alloys was also investigated. The experimental methods included thermogravimetric measurements of oxidation rates and studies on reacted specimens by means of X-ray diffraction, metallographic techniques, and electron microprobe analysis. Two anomalies in the temperature dependence of the oxidation. rate were observed for both alloys and were related to the oxides formed. The SU-31 alloy has the best oxidation resistance. The oxidation mechanism of the alloys is discussed along with the mechanism of protection afforded by the complex disilicide coating system. The coating did not fail after 1000 hours of oxidation (Author)

AD-768 228/9GA Reprint
Pittsburgh Univ Pa Dept of Metallurgical and Materials Engineering
DENDRITE MORPHOLOGY AND MICROSEGREGATION IN TITANIUM BASE ALLOYS,
J. I. Nurminen, and H. D. Brody. Sep 73, 24p Rept no. SETEC-MM-73-03
Contract N00014-67-A-0402-0003
Availability: Pub. in Titanium Science and Technology, v3 p1893-1914 1973.

Descriptors: (*Titanium alloys, *Casting), Dendritic structure, Microstructure, Germanium alloys, Iron alloys, Molybdenum alloys, Vanadium alloys, Aluminum alloys, Cooling.
Identifiers: Solidification.

Sixteen binary titanium alloys were analyzed in th as-cast state for dendrite morphology and microsegregation. Dendrite structure was consistent with the structure found in other alloys; the dendrite arm spacing increased with local solidification time and decreased with increasing solute content. Severity of microsegregation measured for the titanium alloys varied from slight to moderate. Calculations and experimental evidence indicated that considerable homogenization occurs on cooling from the nonequillibrium solidus to room temperature. Although the as-cast segregation might be slight, the composition of the last liquid to freeze is, in general, considerably different from the original melt composition. (Author)

AD-768 337/8GA PC$2.75/MF$1.45
Aerospace Corp El Segundo Calif Lab Operations
COMPARISON OF FIRST QUADRANT YIELD LOCI FOR TI-6AL-4V WITH THOSE PREDICTED BY KNOOP HARDNESS AND STRAIN RATIO MEASUREMENTS.
Rept. of Jul 72-Jun 73,
Maurice F. Amateau, and William D. Hanna. 15 Oct 73, 21p Rept no. TR-0074(4250-10)-3 SAMSO-TR-73-305
Contract F04701-73-C-0074

Descriptors: (*Titanium alloys, Yield point), Anisotropy, Aluminum alloys, Vanadium alloys, Hardness, Strain(mechanics).
Identifiers: Titanium alloy 6 Al 4V, Knoop hardness, Stress strain diagrams.

The first quadrant yield loci of the Ti-6Al-4V alloy determined by means of tensile tests in the rolling and transverse directions and compression tests in the thickness direction were compared with those predicted by Hill's theory of anisotropic yielding and Knoop hardness measurements. Sheet material in the hot-rolled, cold-rolled, and mill-annealed conditions possessing various degrees of anisotropy were examined. The loci predicted from the Knoop hardness measurements did not agree with the measured yield loci for any of the conditions examined. Those predicted by Hill's theory agreed with the measured loci for materials of R value greater than one. (Author)

AERE-R-7172/GA PC$13.50/MF$1.45
Atomic Energy Research Establishment, Harwell (England).
LOW-TEMPERATURE PROPERTIES OF TRANSURANIC METALS.
P. W. Sutcliffe. Aug 72, 226p
U.S. Sales Only.

Descriptors: (*Plutonium-alpha, *Thermodynamic properties), (*Neptunium-alpha, Thermodynamic properties), (*Plutonium carbides, Thermodynamic properties), Debye temperature, Decay, Defects, Electronic specific heat, Electronic structure, Heating, Low temperature, Magnetic properties, Specific heat, Stored energy, Tables, Temperature dependence, Thermal expansion, Ultralow temperature. Very low temperature.

For abstract, see NSA 28 04, number 08661.

ANCR-1097/GA PC$5.45/MF$1.45
Aerojet Nuclear CO., Idaho Falls, Idaho.
HEAT-TO-HEAT VARIATIONS IN THE FATIGUE AND CREEP-FATIGUE BEHAVIOR OF AISI TYPE 304 STAINLESS STEEL, AND THE FATIGUE BEHAVIOR OF TYPE 308 STAINLESS STEEL WELD MATERIAL.
C. R. Brinkman, and G. E. Korth. May 73, 69p
Contract AT(10-1)-1375

Descriptors: (*Stainless steel-304, *Creep), (*Stainless steel-308, Creep), Chemical composition, Fatigue, Filler metals, High temperature, Sampling, Seam welds, Strains, Stresses, Variations, Welded joints.

For abstract, see NSA 28 06, number 13229.

AWRE-O-22/73/GA PC$3.00/MF$1.45
Atomic Weapons Research Establishment, Aldermaston (England).
STRESS CORROSION TESTING USING A POTENTIOSTATIC DYNAMIC STRAIN TECHNIQUE.
J. Brettle, and S. Orman. Apr 73, 50p
U.S. Sales Only.

Descriptors: (*Stress corrosion, *Measuring instruments), (*Uranium, Stress corrosion), (*Titanium, Stress corrosion), (*Titanium base alloys, Stress corrosion), Cracks, Aluminium alloys, Molybdenum alloys, Vanadium alloys.

For abstract, see NSA 28 05, number 11205.

BARC-654/GA PC$3.50/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
SURFACE ANALYSIS AND DEPTH DISTRIBUTION OF IMPURITIES USING CHARGED PARTICLES: FLUORINE IN ZIRCALOY.
S. Gangadharan, and S. Yegnasubramanian. 1972, 27p
U.S. Sales Only.

Descriptors: (*Fluorine, *Nuclear reaction analysis), (*Zircaloy, *Chemical analysis), Impurities, Prompt gamma radiation, Proton reactions, Quantitative chemical analysis, Surfaces.

For abstract, see NSA 28 05, number 10635.

BMI-X-10260/GA PC$3.25/MF$1.45
Battelle Memorial Inst., Columbus, Ohio.
ELECTROCHEMICAL STUDY OF THE CORROSION OF HIGH-STRENGTH ALLOYS IN CONTACT WITH ZIRCALOY-4 (LWBR DEVELOPMENT PROGRAM).
F. H. Haynie, W. E. Berry, and W. K. Boyd. May 73, 22p
Contract W-7405-eng-92

Descriptors: (*Zircaloy-4, *Electrochemical corrosion), (*Inconel 718, Electrochemical corrosion), (*Hastelloys, Electrochemical corrosion), (*Stainless steel-am-350, Electrochemical corrosion), Compatibility, High temperature, Hydrogen additions, Ph value, Stainless steel-ph-15-7-mo, Water.

For abstract, see NSA 28 06, number 13173.

BMI-X-10286/GA PC$5.00/MF$1.45
Battelle Columbus Labs., Ohio.
EFFECTS OF GALVANIC CORROSION AND HYDROGEN ON AM-350 AND INCONEL 718 MATERIALS. LWBR DEVELOPMENT PROGRAM.
P. J. Moreland, W. E. Berry, W. N. Stiegelmeyer, and W. K. Boyd. May 73, 56p
Contract W-7405-eng-92

Descriptors: (*Zircaloy-4, *Electrochemical corrosion), (*Stainless steel-am-350, Electrochemical corrosion), (*Inconel 718, Electrochemical corrosion), Absorption, Anodes, Brazing, Cathodes, Electric currents, Fuel elements, High temperature, Hydrogen, Stress corrosion, Supports, Water, Austenite, Arsenic oxides, Cracks, Sulfuric acid.

For abstract, see NSA 28 06, number 13174.

CEA-CONF-2203/GA PC$3.25/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.
MEASUREMENT OF TOTAL DEFORMATIONS INDUCED IN THE COURSE OF FLOW TESTS.
J. N. Calvet. 1972, 22p CONF-721221-1
In French. U.S. Sales Only.

Descriptors: (*Metals, *Flow stress), (*Alloys, Flow stress), (*Deformation, *Measuring methods), Flow models, Plasticity.

For abstract, see NSA 28 04, number 10547.

CEA-CONF-2209/GA PC$3.50/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
APPLICATION OF BOLLMANN THEORY TO INTERGRANULAR STRUCTURE OF BENDING JOINTS IN STAINLESS STEEL.
G. Sainfort. 26p CONF-720680-1
In French. U.S. Sales Only.

Descriptors: (*Stainless steels, *Bending), Analytical solution, Bicrystals, Electron microscopy, Joints, Microstructure.

For abstract, see NSA 28 04, number 10548.

CEA-CONF-2236/GA PC$3.00/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
ROOM TEMPERATURE DUCTILITY OF DIFFERENT TYPES OF MOLYBDENUM AFTER DIFFERING ANNEALING.
G. Robert, and G. Sainfort. 1972, 13p CONF-720613-8
In French. U.S. Sales Only.

Descriptors: (*Molybdenum, *Embrittlement), Annealing, Dispersions, Grain boundaries, Grain size, Mechanical properties, Melting, Microstructure, Precipitation, Sintered materials, Very high temperature, Zirconium oxides.

For abstract, see NSA 28 06, number 13230.

CONF-721010-47/GA PC$3.00/MF$1.45
Institute of Science, Bombay (India). Inorganic and Nuclear Chemistry Lab.
NEUTRON ACTIVATION ANALYSIS OF COPPER, MERCURY, AND ANTIMONY BY SUBSTOICHIOMETRIC EXTRACTION TECHNIQUE.
B. C. Haldar, and B. M. Tejam. 1972, 8p
U.S. Sales Only.

Descriptors: (*Copper, *Activation analysis), (*Antimony, Activation analysis), (*Mercury, Activation analysis), (*Biological materials, Activation analysis), Accuracy, Multi-element separation, Neutron beams, Neutron reactions, Sensitivity, Solvent extraction, Substoichiometry, Thermal neutrons.

For abstract, see NSA 28 05, number 10636.

CONF-721104-5/GA PC$4.00/MF$1.45
National Research Inst. For Metals, Tokyo (Japan).
CORROSION RESISTANCE OF NI--CR STAINLESS STEEL IN HIGH TEMPERATURE FLOWING WATER-CORROSION AND STRESS CORROSION CRACKING BEHAVIOR IN HIGH TEMPERATURE WATER.
G. Ito, Y. Shimizu, T. Ishihara, and T. Fujii. 23p
In Japanese. U.S. Sales Only.

Descriptors: (*Stainless steel-304, *Corrosion), (*Stainless steel-316, Corrosion), (*Stainless steel-347, Corrosion), (*Stainless steel-430, Corrosion), Corrosion resistance, Cracks, High temperature, Pipes, Pressure dependence, Reactor materials, Stress corrosion, Water.

For abstract, see NSA 28 04, number 08623.

CONF-730806-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.

INTERCRYSTALLINE FRACTURE IN AN INTERNALLY OXIDIZED BCC ALLOY.
R. W. Carpenter, and C. T. Liu. 1973, 5p

Descriptors: (*Tantalum alloy-t111, *Fractures), Cracks, Crystals, Ductility, Grain boundaries, Intergranular corrosion, Mechanical properties, Microstructure, Oxidation.

For abstract, see NSA 28 06, number 13231.

COO-3407-5/GA PC$3.00/MF$1.45
Pennsylvania Univ., Philadelphia (Usa). Lab. For Research on the Structure of Matter.
TEMPERATURE DEPENDENCE OF THE FLOW STRESS OF CU SUB 3 AU AT LOW TEMPERATURES.
D. P. Pope. 1972, 10p

Descriptors: (*Gold alloys, *Flow stress), (*Copper alloys, Flow stress), Compression, Impurities, Low temperature, Medium temperature, Temperature dependence, Very low temperature.

For abstract, see NSA 28 05, number 12547.

COO-3407-6/GA PC$3.00/MF$1.45
Pennsylvania Univ., Philadelphia.
TEMPERATURE DEPENDENCE OF THE LONG RANGE ORDER PARAMETER OF NI SUB 3 AL.
D. P. Pope, and J. L. Garin. 15p
Contract AT(11-1)-3407

Descriptors: (*Nickel alloys, *Order parameters), (*Aluminium alloys, Order parameters), Crystal lattices, High temperature, High temperature, Intermetallic compounds, Medium temperature, Powders, Temperature dependence, Very high temperature.

For abstract, see NSA 28 04, number 10563.

COO-3479-4/GA PC$3.25/MF$1.45
State Univ. Of New York, Stony Brook.
FATIGUE-ENHANCEMENT OF DIFFUSION. PROGRESS REPORT FOR YEAR ENDING MAY 31, 1973.
H. Herman. 1973, 23p
Contract AT(11-1)-3479

Descriptors: (*Brass-alpha, *Diffusion), Crystal defects, Electric conductivity, Fatigue, Interstitials, Low temperature, Medium temperature, Vacancies.

For abstract, see NSA 28 05, number 12548.

COO-841-27/GA PC$3.00/MF$1.45
Minnesota Univ., Minneapolis. Dept. Of Chemical Engineering and Materials Science.
THERMOTRANSPORT OF BERYLLIUM AND MERCURY IN LIQUID SODIUM.
B. N. Bhat, S. P. Murarka, and R. A. Swalin. 1972, 6p
Contract AT(11-1)-841

Descriptors: (*Beryllium alloys, *Thermodynamic properties), (*Mercury alloys, Thermodynamic properties), (*Sodium alloys, Thermodynamic properties), Diffusion, Heating, Liquids, Tracer techniques.

For abstract, see NSA 28 05, number 11225.

COO-841-29/GA PC$3.00/MF$1.45
Minnesota Univ., Minneapolis. Dept. Of Chemical Engineering and Materials Science.
THERMOTRANSPORT STUDIES IN LIQUID ALKALI METAL ALLOYS.
S. P. Murarka, T. Y. Kim, M. Y. Hsieh, and R. A. Swalin. 1973, 18p

Descriptors: (*Rubidium, *Thermodynamics), (*Potassium, Thermodynamics), (*Sodium, Thermodynamics), Chemical composition, Diffusion, Potassium 42, Reaction heat, Rubidium 86, Sodium 22, Trace amounts, Tracer techniques.

For abstract, see NSA 28 06, number 13175.

COO-841-30/GA PC$3.00/MF$1.45
Minnesota Univ., Minneapolis. Inst. Of Tech.
DIFFUSION STUDIES IN LIQUID METALS. FINAL REPORT.
R. A. Swalin. Apr 73, 14p
Contract AT(11-1)-841

Descriptors: (*Alkali metals, *Self-diffusion), (*Silver, Self-diffusion), (*Liquid metals, *Diffusion), Pressure dependence, Temperature dependence, Antimony, Gold, Sulfur, Thermal diffusion.

For abstract, see NSA 28 04, number 10555.

DUN-8075/GA PC$3.00/MF$1.45
Douglas United Nuclear, Inc., Richland, Wash.
ANALYSIS OF WEAR TEST COMPARING ZIRCALOY-2 ON ZIRCALOY-2 VERSUS 1010 STEEL ON ZIRCALOY-2.
K. E. Fields. 12 Feb 73, 20p

Descriptors: (*Zircaloy-2, *Wear resistance), (*Steels, Wear resistance), Measuring methods, Sliding friction, Stresses, Supports.

For abstract, see NSA 28 05, number 11206.

EURFNR-1060/GA PC$4.25/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Material und Festkoerperforschung.
AGE-HARDENING PHENOMENA IN V--TI, V--TI--SI, V--ZR, AND V--HF ALLOYS WITH REFERENCE TO THE METALLOIDS N, O, B, AND C.
H. Scholz. Oct 72, 44p KFK-1680

Descriptors: (*Vanadium base alloys, *Age hardening), (*Titanium alloys, Age hardening), (*Zirconium alloys, Age hardening), (*Hafnium alloys, Age hardening), Boron additions, Carbon additions, Dilute alloys, Nitrogen additions, Oxygen additions, Silicon alloys.

For abstract, see NSA 28 04, number 08663.

EURFNR-1061/GA PC$3.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Material und Festkoerperforschung.
INFLUENCE OF COLD WORK ON THE CORROSION RESISTANCE OF AUSTENITIC CRNI STEELS IN SUPERHEATED STEAM. 2. STATIC AUTOCLAVE STUDIES ON INCOLOY 800 IN DIFFERENT GRAIN SIZES.
S. Leistikow, and E. Pott. Dec 72, 28p KFK-1681

Descriptors: (*Incoloy 800, *Corrosion resistance), Cold working, Grain size, High temperature, Rolling, Steam, Superheating.

For abstract, see NSA 28 04, number 08758.

EURFNR-1087/GA PC$3.75/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Material und Festkoerperforschung.
INFLUENCE OF COLD WORK ON THE CORROSION RESISTANCE OF AUSTENITIC CRNI STEELS IN SUPERHEATED STEAM. PART 3. STATIC AUTOCLAVE INVESTIGATIONS ON MATERIAL 1.4301 (X5 CRNI 18 9).
S. Leistikow, E. Pott, and W. Volz. Mar 73, 34p

Descriptors: (*Stainless steel-304, *Corrosion resistance), Chromium oxides, Cold working, Corrosion, Corrosive effects, Diffusion, Grain size, High temperature, Medium pressure, Oxygen ions, Steam.

For abstract, see NSA 28 05, number 11207.

HEDL-SA-225/GA PC$4.00/MF$1.45
Wadco Corp., Richland, Wash. North Carolina State Univ., Raleigh. Battelle Pacific Northwest Labs., Richland, Wash.
COMPUTER SIMULATION OF ASYMMETRIC GRAIN BOUNDARIES AND THEIR INTERACTION WITH VACANCIES AND CARBON IMPURITY ATOMS.
R. E. Jr. Dahl, J. R. Jr. Beeler, and R. D. Bourquin. Sep 71, 39p CONF-711071-1
Contract AT(45-1)-1830

Descriptors: (*Grain boundaries, *Simulation), (*Iron, Grain boundaries), (*Stainless steels, Grain boundaries), Asymmetry, Atoms, Carbon, Diffusion, Impurities, Interactions, Metals, Polycrystals, Vacancies.

For abstract, see NSA 28 04, number 10566.

HEDL-TM-72-105/GA PC$7.60/MF$1.45
Hanford Engineering Development Lab., Richland, Wash.
IRRADIATION EFFECTS ON REACTOR STRUCTURAL MATERIALS. QUARTERLY PROGRESS REPORT, MAY, JUNE, JULY, 1972.
T. T. Claudson. Aug 72, 283p
Contract AT(45-1)-2170

Descriptors: (*Stainless steel-304, *Physical radiation effects), (*Stainless steel-316, *Mechanical properties), (*Stainless steel-18-8, Physical radiation effects), (*Vanadium base alloys, Physical radiation effects), Reactor materials, Cracks, Failures, Fatigue, High temperature, Interstitials, Ion beams, Mev range 01-10, Neutron beams, Neutrons, Nickel ions, Strains, Stresses, Trapping, Tubes, Voids, Annealing, Fast neutrons, Microstructure, Proton beams, Protons, Rolling, Swelling, Titanium additions, Yield strength, Creep, Hardness, Helium, Measuring methods, Pile neutrons, Pressure dependence, Hardening, Welded joints, Aging, Carbides, Chemical composition, Cold working, Dislocations, Fracture properties, Fractures, Fuel cans, Heavy ions, Helium ions, Ion implantation, Nickel, Plates, Precipitation, Temperature dependence, Tensile properties.

For abstract, see NSA 28 05, number 11317.

HEDL-TME-72-64/GA PC$7.60/MF$1.45
Hanford Engineering Development Lab., Richland, Wash.
IRRADIATION EFFECTS ON REACTOR STRUCTURAL MATERIALS. QUARTERLY PROGRESS REPORT, FEBRUARY--APRIL 1972.
T. T. Claudson. Jun 72, 267p
Contract AT(45-1)-2170

Descriptors: (*Stainless steel-316, *Physical radiation effects), (*Stainless steel-304, Physical radiation effects), (*Stainless steels, Physical radiation effects), (*Stainless steel-405, Physical radiation effects), Reactor materials, Creep, Diagrams, Fatigue, High temperature, Hysteresis, Strain, Welded joints, Chemical analysis, Cold working, Deuteron beams, Deuterons, Dislocations, Distribution, Equations, Failures, Fast neutrons, Fuel cans, Heat treatments, Neutron beams, Precipitation, S codes, Swelling, Temperature dependence, Tubes, Vacancies, Voids, Atoms, Proton beams, Protons, Tensile properties, Capsules, Fuel pins, Metallography, Pile neutrons, Ruptures, Stainless steel-321, Stresses, Titanium additions, Titanium carbides, Uses, Yield strength, Ductility, Electron microscopy, Fractures, Grain orientation, Texture.

For abstract, see NSA 28 05, number 11316.

IEA-268/GA PC$3.00/MF$1.45
Instituto de Energia Atomica, Sao Paulo (Brazil).

ASSOCIATION OF THE METHODS OF ACTIVATION ANALYSIS AND ISOTOPIC DILUTION. DETERMINATION OF COPPER IN HIGH PURITY GOLD SAMPLES.
F. W. Lima, and L. T. Atalla. Apr 72, 11p CONF-690508-5
U.S. Sales Only.

Descriptors: (*Copper, *Activation analysis), (*Gold, *Chemical analysis), Impurities, Isotope dilution, Quantitative chemical analysis, Trace amounts.

For abstract, see NSA 28 04, number 07837.

IS-T-580/GA PC$6.75/MF$1.45
Ames Lab., Iowa.
EFFECT OF NITROGEN ON THE STRENGTH OF THORIUM.
D. R. McLachlan. May 73, 94p
Contract W-7405-eng-82

Descriptors: (*Thorium, *Flow stress), (*Thorium nitrides, Flow stress), Age hardening, Chemical composition, Dislocations, High temperature, Low temperature, Medium temperature, Nitrogen, Quantity ratio, Temperature dependence, Ultralow temperature, Very low temperature.

For abstract, see NSA 28 06, number 13253.

JAERI-M-5094/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
SPECTROPHOTOMETRIC DETERMINATION OF BORON, COPPER, AND TANTALUM IN NICKEL-BASE ALLOYS.
Y. Toita, H. Nagai, K. Sekine, and H. Onishi. Jan 73, 17p
In Japanese. U.S. Sales Only.

Descriptors: (*Boron, *Spectrophotometry), (*Copper, Spectrophotometry), (*Tantalum, Spectrophotometry), (*Nickel base alloys, *Chemical analysis), Quantitative chemical analysis, Boron complexes, Distillation, Methanol, Methylene blue, Tantalum complexes, Copper complexes, Dedtc, Edta, Ketones, Methyl isobutyl ketone, Quinolines, Solvent extraction.

For abstract, see NSA 28 04, number 07845.

JAPFNR-103/GA PC$4.75/MF$1.45
Japan Atomic Energy Research Inst., Tokai.
HIGH SPEED TENSILE TEST AT THE ELEVATED TEMPERATURES.
T. Fujimura, T. Isozaki, and T. Oba. May 72, 50p
PNC-J-250, JAERI-Memo-4854
U.S. Sales Only.

Descriptors: (*Stainless steels, *Mechanical properties), Elongation, High temperature, Medium temperature, Nuclear fuels, Power reactors, Strains, Temperature dependence, Tensile properties, Variations.

For abstract, see NSA 28 05, number 11226.

LA-5169/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
COMPATIBILITY OF ZIRCALOY-4 AND NB--1 WT% ZR ALLOY IN HYDROGEN AS A FUNCTION OF TEMPERATURE.
R. E. Riley, and T. I. Jones. Apr 73, 20p
Contract W-7405-eng-36

Descriptors: (*Niobium base alloys, *Stability), (*Zirconium alloys, Stability), (*Zircaloy-4, Stability), (*Hydrogen, *Chemical reactions), Compatibility, Embrittlement, Hydrides, Microstructure, Temperature dependence.

For abstract, see NSA 28 06, number 13176.

LFEN-144-a/GA PC$3.25/MF$1.45
Junta de Energia Nuclear, Sacavem (Portugal). Laboratorio de Fisica E Engenharia Nucleares.
ANALYSIS OF BINARY ZIRCONIUM--NIOBIUM ALLOYS BY X-RAY FLUORESCENCE SPECTROSCOPY.
M. H. Carvalho. 1972, 22p
In Portuguese. U.S. Sales Only.

Descriptors: (*Zirconium alloys, *Quantitative chemical analysis), (*Niobium alloys, Quantitative chemical analysis), Calibration standards, Quantity ratio, X-ray fluorescence analysis.

For abstract, see NSA 28 04, number 08664.

MLM-2037/GA PC$5.45/MF$1.45
Mound Lab., Miamisburg, Ohio.
EFFECT OF OXYGEN AND TEMPERATURE ON THE IMPACT BEHAVIOR OF T-111 (TA--8% W--2% HF).
D. R. Schaeffer. 1 May 73, 57p
Contract AT-33-1-Gen-53

Descriptors: (*Tantalum alloy-t111, *Impact tests), Fractures, High temperature, Impact strength, Medium temperature, Oxygen additions, Temperature dependence, Very high temperature.

For abstract, see NSA 28 06, number 13255.

N-72-30502/GA PC$4.00/MF$1.45
Engelhard Industries, Newark, N.J. Research and Development Dept.
DEVELOPMENT OF PLATINUM--THORIUM OXIDE ALLOY FOR RESISTOJET THRUSTER USE. FINAL REPORT.
H. J. Albert, and J. S. Hill. Jul 71, 37p NASA-CR-111959
Contract NAS1-10433

Descriptors: (*Platinum base alloys, *Fabrication), (*Thorium oxides, Fabrication), (*Nozzles, Fabrication), Dispersions, Electron beam welding, Engines, Jets, Stresses, Time dependence, Tubes, Welded joints.

For abstract, see NSA 28 06, number 13256.

N-73-14115/GA PC$4.00/MF$1.45
Forsvarets Forskningsanstalt, Stockholm (Sweden).
DETERMINATION OF HYDROGEN, CARBON, AND NITROGEN IN PLUTONIUM METAL BY A COMBUSTION TECHNIQUE AND OF HYDROGEN BY A HOT EXTRACTION TECHNIQUE.
K. F. Alm, and L. H. Andersson. Oct 72, 9p ISBN-91-7056-17-X

Descriptors: (*Plutonium, *Chemical analysis), (*Hydrogen, Chemical analysis), (*Carbon, *Gas chromatography), (*Nitrogen, Gas chromatography), Combustion, Separation processes, Very high temperature.

For abstract, see NSA 28 04, number 07847.

N-73-16562/GA PC$5.45/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA. Astronuclear Lab.
DEVELOPMENT OF ADVANCED HIGH-STRENGTH TANTALUM-BASE ALLOYS. PART 1. SCREENING INVESTIGATION. FINAL REPORT, OCTOBER 1967--4 JULY 1970.
R. W. Jr. Buckman. Dec 71, 68p NASA-CR-120818, WANL-PR-71-1(Pt.1)
Contract NAS3-10939

Descriptors: (*Tantalum base alloys, *Mechanical properties), (*Tungsten alloys, Mechanical properties), (*Rhenium alloys, Mechanical properties), (*Hafnium alloys, Mechanical properties), Carbon additions, Creep, Nitrogen additions, Precipitation, Solid solutions, Tensile properties.

For abstract, see NSA 28 06, number 13209.

NAA-SR-Memo-10914/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
OXIDATION KINETICS OF SNAP FUEL ALLOY, MODIFIED 90-10 ZIRCONIUM-URANIUM.
S. D. Harkness. 18 Jan 65, 33p
Contract AT(11-1)-Gen-8

Descriptors: (*Zirconium base alloys, *Oxidation), (*Uranium alloys, Oxidation), (*Nuclear fuels, Oxidation), (*Snap reactors, Nuclear fuels), Binary alloy systems, High temperature, Reaction kinetics, Very high temperature.

For abstract, see NSA 28 05, number 11210.

NAA-SR-10277/GA PC$4.50/MF$1.45
Atomics International, Canoga Park, Calif.
ROOM-TEMPERATAURE COMPRESSIVE PROPERTIES OF ZR--10 U ALLOY HYDRIDE AT HIGH HYDROGEN CONTENTS.
L. B. Lundberg, and J. T. Berling. 30 Aug 66, 47p
Contract AT(11-1)-GEN-8

Descriptors: (*Uranium alloys, *Compression), (*Zirconium base alloys, Compression), (*Hydrides, Compression), (*Zirconium hydrides, Compression), Carbon, Compressibility, Cracks, Dislocations, Ductility, Hydrogen, Hydrogen additions, Interfaces, Losses, Medium temperature, Motion, Nuclear fuels, Poisson ratio, Snap reactors, Strains, Stresses, Surfaces, Twinning, Yield strength, Young modulus.

For abstract, see NSA 28 05, number 11233.

NAA-SR-10965/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
PHASE RELATIONSHIPS AND MICROSTRUCTURES IN THE ZIRCONIUM--10 WT PERCENT URANIUM ALLOY HYDRIDE SYSTEM.
J. W. Raymond. 30 Nov 65, 37p
Contract AT(11-1)-GEN-8

Descriptors: (*Uranium alloys, *Allotropy), (*Zirconium hydrides, Allotropy), (*Zirconium alloys, *Hydrogen additions), Chemical composition, Equilibrium, Microstructure, Phase diagrams, Photomicrography.

For abstract, see NSA 28 05, number 11234.

NAA-SR-11951/GA PC$4.50/MF$1.45
Atomics International, Canoga Park, Calif.
OXIDATION KINETIC STUDIES ON SNAP FUELS.
W. A. Young. 15 Jun 66, 50p
Contract AT(11-1)-Gen-8

Descriptors: (*Zirconium base alloys, *Oxidation), (*Uranium alloys, Oxidation), (*Snap reactors, Nuclear fuels), (*Nuclear fuels, Oxidation), High temperature, Hydrides, Isothermal processes, Reaction kinetics, Time dependence, Very high temperature, Zirconium hydrides.

For abstract, see NSA 28 05, number 11209.

NAA-SR-12025/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
HYDROGEN BEHAVIOR IN NAK-78.
R. W. Webb. 1 May 67, 38p
Contract AT(04-3)-701

Descriptors: (*Sodium alloys, *Diffusion), (*Potassium alloys, Diffusion), (*Hydrogen, Diffusion), (*Stainless steel-321, *Permeability), Chemical composition, Containers, Coolants, Diagrams, Equilibrium, Gettering, High temperature, Liquid metals, Pressure dependence, Solution heat, Uses, Very high temperature, Yttrium.

For abstract, see NSA 28 05, number 11237.

NAA-SR-6732/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
MECHANICAL STRENGTH OF HYDRIDES OF ZIRCONIUM AND ZIRCONIUM-BASE ALLOYS.
J. W. Raymond, and S. M. Toy. 15 Apr 62, 22p
Contract AT(11-1)-GEN-8

Descriptors: (*Zirconium hydrides, *Mechanical properties), (*Uranium alloys, Mechanical properties), (*Niobium alloys, Mechanical properties), (*Chromium alloys, Mechanical properties), Compression strength, Fracture properties, High temperature, Ruptures, Tensile properties, Lanthanum alloys.

For abstract, see NSA 28 05, number 11228.

NAA-SR-7305/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
DEVELOPMENT OF A HIGH YIELD 90 ZR--10 U ALLOY MASSIVE HYDRIDE.
J. W. Raymond. 1 Jan 63, 22p
Contract AT(11-1)-Gen-8

Descriptors: (*Zirconium base alloys, *Hydrides), (*Uranium alloys, Hydrides), (*Zirconium hydrides, *Production), (*Uranium hydrides, Production), Binary alloy systems, Carbon additions, Fuel rods, Grain size, Reaction kinetics, Snap reactors, Zirconium carbides.

For abstract, see NSA 28 05, number 11229.

NAA-SR-8617(Vol.1)(Add.1)/GA PC$3.00/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP TECHNOLOGY HANDBOOK. VOLUME 1, ADDENDUM 1. LIQUID METALS.
G. F. Burdi. 30 May 64, 14p
Contract AT(11-1)-Gen-8

Descriptors: (*Heat resisting alloys, *Corrosion), (*Transition elements, Corrosion), (*Sodium alloys, *Heat transfer), (*Potassium alloys, Heat transfer), Boilers, Corrosive effects, Data, High temperature, Liquid metals, Lithium, Mercury, Potassium, Snap reactors, Very high temperature.

For abstract, see NSA 28 05, number 11208.

NP-19777/GA PC$4.00/MF$1.45
National Inst. For Metallurgy, Johannesburg (South Africa).
ANNUAL REPORT, 1972.
1972, 36p
U.S. Sales Only.

Descriptors: (*South africa, *Research programs), (*Metallurgy, Research programs).

For abstract, see NSA 28 04, number 10492.

NRL-7565/GA PC$3.50/MF$1.45
Naval Research Lab., Washington, D. C.
J-INTEGRAL CHARACTERIZATION OF IRRADIATED STAINLESS STEELS.
F. J. Loss, and R. A. Jr. Gray. 25 Apr 73, 26p

Descriptors: (*Stainless steel-304, *Physical radiation effects), (*Stainless steel-308, Physical radiation effects), (*Welded joints, Physical radiation effects), Cold working, Cracks, Fracture properties, Integrals, Notches, Stress analysis.

For abstract, see NSA 28 05, number 11240.

N73-29525/5GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
ROLE OF HF AND ZR IN THE HYDROGEN EMBRITTLEMENT OF TA AND CB ALLOYS.
J. R. Stephens. 1973, 13p NASA-TM-X-68293
Conf-Proposed for Presentation at Conf. On Hydrogen in Metals: Effects on Properties, Selection, and Design, Champion, Penn., 23-27 Sep. 1973,; Sponsored by AM. Soc. For Metals.

Descriptors: *Hydrogen embrittlement, *Niobium alloys, *Tantalum alloys, Ductility, Hafnium, Metallography, X ray diffraction, Zirconium.

For abstract, see STAR 1120

N73-29526/3GA PC$3.00/MF$1.45
Mitsubishi Heavy-Industries, Ltd., Tokyo (Japan).
STRENGTH AND MICROSTRUCTURE OF NICKEL BASE SUPERALLOYS AFTER LONG TERM HEATING.
H. Susukida, Y. Sakumoto, I. Tsuji, and H. Kawai. Jun 73, 7p TB-86

Descriptors: *Heat treatment, *Mechanical properties, *Microstructure, *Nickel alloys, Creep rupture strength, Heat resistant alloys, High temperature, Long term effects, Tensile properties, Thermal fatigue.

For abstract, see STAR 1120

N73-29529/7GA PC$3.00/MF$1.45
Defence Standards Labs., Woodville North (Australia).
THE PHOTOMETRIC DETERMINATION OF MOLYBDENUM IN STEEL.
R. H. Schunke. May 73, 11p TN-303

Descriptors: *Alloys, *Chemical analysis, *Iron, *Molybdenum, *Steels, Metallography, Physical properties, Temperature effects.

For abstract, see STAR 1120

N73-29530/5GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
COATED COLUMBIUM THERMAL PROTECTION SYSTEMS: AN ASSESSMENT OF TECHNOLOGICAL READINESS.
S. R. Levine, and S. J. Grisaffe. Aug 73, 39p
NASA-TM-X-2858, E-7353
Subm-Prepared in Cooperation with Army Air Mobility R and D Lab., Cleveland, Ohio.

Descriptors: *Niobium, *Technology assessment, *Thermal protection, Coatings, Heat shielding, Space shuttle orbiters.

For abstract, see STAR 1120

N73-29531/3GA PC$4.00/MF$1.45
Grambling Coll., La. Dept. of Physics.
TIME EXPOSURE STUDIES ON STRESS CORROSION CRACKING OF ALUMINUM 2014-T6, 2219-T87, 2014-T651, 7075-T651, AND TITANIUM 6AL-4V.
Final Summary Report, 1 Jun. 1971 - 1 Jun. 1973.
J. Terrell. 1 Jun 73, 38p NASA-CR-124352
Contract NGR-19-011-009

Descriptors: *Aluminum alloys, *Stress corrosion cracking, *Titanium alloys, Alcohols, Sodium chlorides, Water.

For abstract, see STAR 1120

N73-29533/9GA PC$3.00/MF$1.45
George Washington Univ., Washington, D.C. School of Engineering and Applied Science.
ELLIPSOMETRIC MEASUREMENTS ON THE PASSIVE FILM PRIOR TO THE INITIATION OF BREAKDOWN IN ALUMINUM.
J. Yahalom, J. Kruger, and C. L. Mcbee. 1971, 9p
NASA-CR-132301
Contract NGL-09-010-053

Descriptors: *Aluminum, *Chlorides, *Ellipsometers, *Metal films, Aqueous solutions, Crack propagation, Stress corrosion cracking.

For abstract, see STAR 1120

N73-29946/3GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
FLAW GROWTH BEHAVIOR IN THICK WELDED PLATES OF 2219-T87 ALUMINUM AT ROOM AND CRYOGENIC TEMPERATURES.
R. G. Forman, S. V. Glorioso, and J. D. Medlock. Aug 73, 50p NASA-TN-D-7377, JSC-S-368

Descriptors: *Aluminum, *Crack propagation, *Mechanical properties, Cryogenics, Fracture mechanics, Room temperature, Tensile strength.

For abstract, see STAR 1120

ORNL-TM-4099/GA PC$5.75/MF$1.45
Oak Ridge National Lab., Tenn.
REACTIONS AND TRANSPORT PHENOMENA AT SURFACES. WATER RESEARCH PROGRAM BIENNIAL PROGRESS REPORT FOR THE PERIOD MARCH 15, 1966--MARCH 15, 1968.
F. A. Posey, G. E. Moore, and K. A. Kraus. Mar 73, 71p
Contract W-7405-eng-26

Descriptors: (*Sodium chlorides, *Corrosive effects), (*Titanium, *Corrosion), (*Titanium alloys, Corrosion), (*Oxidation, *Electrodes), Chemical reactions, Water, Aqueous solutions, Electrolytes, Porosity, Potassium chlorides, Reduction, Tubes, Chemical composition, Potentiometry, Electrolysis, Electrolytic cells, Metals, Rectifiers, Sodium sulfates, Valves.

For abstract, see NSA 28 06, number 15152.

ORNL-TM-4155/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
EVALUATION OF DISCONTINUITIES IN HSST TWELVE-INCH-THICK PLATE.
K. K. Klindt, and D. A. Canonico. Jun 73, 38p
CONF-690437-1
Contract W-7405-eng-26

Descriptors: (*Steel-astm-a533, *Defects), (*Ultrasonic testing, *Performance), (*Destructive testing, Performance), Aluminium, Cracks, Inclusions, Iron, Lamellae, Manganese, Nondestructive testing, Plates, Porosity, Silicon, Transducers, Voids, Electron probes, Microstructure.

For abstract, see NSA 28 05, number 11243.

ORNL-TM-4172/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
CORROSION OF TYPE 304L STAINLESS STEEL AND HASTELLOY N BY MIXTURES OF BORON TRIFLUORIDE, AIR, AND ARGON.
J. W. Koger. Dec 72, 18p
Contract W-7405-eng-26

Descriptors: (*Stainless steel-304, *Corrosion), (*Hastelloys, Corrosion), (*Boron fluorides, *Corrosive effects), Air, Argon, Gases, High temperature, Losses, Mixtures, Weight.

For abstract, see NSA 28 05, number 11211.

ORNL-TM-4173/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
INFLUENCE OF VARIOUS ALLOYING ADDITIONS ON THE STRENGTH OF NICKEL-BASE ALLOYS.
H. E. McCoy. Dec 72, 40p
Contract W-7405-eng-26

Descriptors: (*Nickel base alloys, *Creep), Chromium additions, Fractures, High temperature, Iron additions, Manganese additions, Microstructure, Molybdenum additions, Rup-

tures, Silicon additions, Stresses, Tensile properties, Yield strength.

For abstract, see NSA 28 06, number 13258.

ORNL-TM-4253/GA PC$4.50/MF$1.45
Oak Ridge National Lab., Tenn.
THERMOPHYSICAL PROPERTIES OF URANIUM BASED MO, NB, ZR, TI ALLOYS FROM 77 TO 1500 K.
T. G. Kollie, J. P. Moore, D. L. McElroy, H. L. Whaley, and R. K. Williams. Jun 73, 49p
Contract W-7405-eng-26

Descriptors: (*Uranium base alloys, *Mechanical properties), Dilute alloys, High temperature, Low temperature, Medium temperature, Molybdenum additions, Niobium additions, Physical properties, Temperature dependence, Thermodynamic properties, Titanium additions, Very high temperature, Zirconium additions.

For abstract, see NSA 28 06, number 13259.

ORO-3291-17/GA PC$3.00/MF$1.45
Tennessee Univ., Knoxville. Dept. Of Chemical and Metallurgical Engineering.
APPLICATION OF ADIABATIC CALORIMETRY TO METAL SYSTEMS. PROGRESS REPORT, 1972--1973.
C. R. Brooks, and E. E. Stansbury. 1973, 11p
Contract AT(40-1)-3291

Descriptors: (*Bismuth, *Specific heat), (*Stainless steels, Specific heat), Austenite, Deformation, Diagrams, High temperature, Liquid metals, Medium temperature, Solids.

For abstract, see NSA 28 05, number 11141.

PATENT-3 714 069/GA Not available NTIS
Department of the Navy Washington D C
CORROSION PREVENTING COMPOSITION.
Patent,
Barbara J. Northan, and David B. Boies. Filed 17 Dec 70, patented 30 Jan 73, 3p Rept nos. PAT-APPL-99 285,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Corrosion inhibition, *Patents), (*Sulfonates, Corrosion inhibition), Barium compounds, Amines, Organic phosphorus compounds, Ammonium compounds, Sodium compounds.
Identifiers: PAT-CL-252-389-A, Sodium sulfonate, Organic phosphates, Barium sulfonate, Ammonium sulfonate.

The invention describes, a composition for significantly improving corrosion protection comprising the combination of an alkularyl sulfonate with a surface active agent including partial organic phosphate esters neutralized with ethylenediamine or barium. An aromatic petroleum hydrocarbon resin is added to enhance protection in crevice areas and to improve handling characteristics. This composition is for application to damaged areas of paint films on metal surfaces for temporary corrosion prevention until repainting can be done.

PATENT-3 718 570/GA Not available NTIS
Department of the Navy Washington D C
CATHODIC PROTECTION ANODE WITH SECTIONS REPLACEABLE UNDERWATER.
Patent,
Isidore Geld. Filed 1 Jun 70, patented 27 Feb 73, 5p Rept nos. PAT-APPL-42-169,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Anodes, Cathodic protection), (*Patents, Anodes), Maintenance, Underwater, Ship hulls.
Identifiers: PAT-CL-204-196.

The patent describes an impressed current anode assembly for cathodic protection that includes several anode sections clamped to a bus conductor in the assembly. Each anode section is separable from the anode assembly and replaceable by a scuba diver equipped with simple hand tools.

PB-223 741/0GA PC$2.75/MF$1.45
BISRA-The Corporate Labs. of the British Steel Corp., London (England).
GALVANIC CORROSION OF MILD STEEL WHEN COUPLED TO OTHER MATERIALS.
K. E. Johnson, and J. S. Abbott. Aug 73, 13p*
BISRA-CEL/CH/23/73

Descriptors: (*Galvanic corrosion, *Steels), Galvanic corrosion tests, Reaction kinetics, Corrosion environments, Great Britain.

Corrosion rates of mild steel when coupled to each of 31 other metals and alloys were determined. Environments studied include industrial, rural and marine atmospheres, natural water and sea water. Rank orders of corrosion rates for each environment were made.

PB-224 062/0GA PC$2.75/MF$1.45
Bureau of Mines, Washington, D.C.
DETERMINATION OF EIGHT MINOR ELEMENTS IN LOW-ALLOY STEELS BY FLUORESCENT X-RAY SPECTROGRAPHY.
Rept. of investigations,
William J. Campbell, and David L. Neylan. Aug 73, 18p* BuMines-RI-7773
Prepared in cooperation with College Park Metallurgy Research Center, College Park, Md.

Descriptors: (*Low alloy steels, Chemical analysis), X ray analysis, X ray fluorescence, Metal scrap, Spectrographs, Spectroscopy, Aluminum, Copper, Chromium, Manganese, Nickel, Phosphorus, Silicon, Tin.

An analytical method development and evaluation was undertaken to provide accurate determinations of eight minor elements in low alloy steels prepared from ferrous scrap. Fluorescent x-ray spectrography was the principal method investigated. All x-ray data were processed by a timesharing computer. No corrections were found necessary for interelement effects or overlapping spectral lines. These studies show that x-ray spectrographic analysis of lathe-finished surfaces provide accurate determinations of aluminum, copper, chromium, manganese, nickel, phosphorus, silicon and tin. (Author)

PB-224 065/3GA PC$2.75/MF$1.45
Bureau of Mines, Washington, D.C.
REDUCING COPPER AND TIN IMPURITIES IN FERROUS SCRAP RECOVERED FROM INCINERATED MUNICIPAL REFUSE.
Rept. of investigations,
L. L. Oden, A. Adams, and A. D. Fugate. Aug 73, 16p* BuMines-RI-7776
Prepared by Albany Metallurgy Research Center, Albany, Oreg.

Descriptors: (*Metal scrap, *Refining), (*Refuse, *Materials recovery), Steel, Copper, Tin, Oxidation, Leaching, Purification, Shredding.

The purpose of the research was to develop a method to remove copper and tin from the magnetic fraction of incinerated municipal refuse, as recovered by the Bureau's pilot plant in College Park, Maryland. Copper, present in the scrap in metallic form bonded to ferrous objects, was amenable to leaching in cupric ammonium carbonate solution. Copper levels in small 5 to 10 lb lots of treated scrap were reduced from the initial level of 0.5 to 0.6 percent to 0.1 to 0.2 percent. Larger lots of scrap (100 lbs) were treated less effectively because of poor contact of solution and scrap. Oxidation in air or aerated aqueous solution was applied to liberate tin from the dilute solid solution present on the surface of incinerated tin plate. Shredding of air-oxidized scrap or caustic leaching of scrap oxidized in solution reduced tin levels from the initial 0.25 percent level to about 0.1 percent. (Author)

PB-224 090/1GA PC$2.75/MF$1.45
Bureau of Mines, Washington, D.C.
EFFECT OF COPPER AND SILICON ON SELECTED MECHANICAL PROPERTIES OF HOT-ROLLED MEDIUM-CARBON STEELS.
Rept. of investigations 1971-1973,
Mark I. Copeland. Aug 73, 24p BuMines-RI-7777
Prepared in cooperation with Albany Metallurgy Research Center, N.Y.

Descriptors: (*Carbon steels, Mechanical properties), Copper containing alloys, Silicon containing alloys, Hot rolling, Metal scrap, Heat treatment, Hardness, Tensile properties, Impact strength.

Bureau of Mines researchers investigated the effect of copper and silicon contents of up to 1 wt % on the heat treatment response, hardness, tensile, and impact properties of hot-rolled medium-carbon steels. The steels were prepared by induction melting and fabricated into plates by forging and rolling. The tensile strength of 0.2 wt % carbon steels containing 0.3 wt % silicon was affected significantly by copper in both the hot rolled and heat treated (600C) conditions, but not the 0.3 wt % carbon steels. The 600C treatment was considered optimum as a post-rolling treatment to strengthen the steels by copper-precipitation. Strengthening of 0.2 wt % carbon steels by silicon was reduced by increasing copper contents. Optimum impact strengths occurred at about 0.3 wt % silicon in 0.2 wt % carbon steels containing 0.6 and 0.8 wt % copper. The impact strengths were lowest for 0.2 wt % carbon steels containing over 0.8 wt % copper and greater than 0.3 wt % silicon, especially in the heat-treated condition. Copper and silicon solutes and copper precipitates strengthened the steels. This effect was augmented slightly by strengthening through grain refinement by these solutes. (Author)

RD/B/M-2419/GA PC$4.00/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
PRECIPITATION IN 20% CR--25% NI--NB STABILISED STEELS. A LITERATURE SURVEY.
G. Knowles. Feb 73, 38p
U.S. Sales Only.

Descriptors: (*Stainless steel-20-25, *Precipitation), (*Niobium nitrides, Precipitation), (*Niobium carbides, Precipitation), Impurities, Microstructure, Niobium additions, Nucleation, Physical radiation effects, Reviews, Solid solutions.

For abstract, see NSA 28 04, number 08667.

RD/B/M-2588/GA PC$3.00/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
CREEP STRESS EXPONENT FOR SOME REACTOR STRUCTURAL STEELS.
P. Marshall. Feb 73, 14p
U.S. Sales Only.

Descriptors: (*Steels, *Creep), Carbon steels, Chromium-molybdenum steels, Mechanical structures, Stainless steel-304, Stainless steel-316, Stainless steel-321, Strains, Stresses.

For abstract, see NSA 28 05, number 11244.

RD/B/N-1996/GA PC$3.50/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
HIGH TEMPERATURE LOW CYCLE FATIGUE EFFECT OF NOTCHES.
T. R. Cook. Feb 73, 26p
U.S. Sales Only.

Descriptors: (*Stainless steel-20-25, Fatigue), (*Fatigue, *Notches), Cracks, High temperature, Strains, Stresses.

For abstract, see NSA 28 04, number 08668.

TID-26322/GA PC$11.00/MF$1.45
Michigan Univ., Ann Arbor (Usa). Dept. Of Materials and Metallurgical Engineering.
THERMODYNAMIC PROPERTY MEASUREMENTS OF SOLID CHROMIUM SESQUIOXIDE AND CHROMIUM IN SOLID ALLOYS WITH IRON AND NICKEL.
F. N. Mazandarany. 1972, 177p
Contract AT(11-1)-1791

Descriptors: (*Chromium, *Thermodynamic properties), (*Chromium oxides, Thermodynamic properties), (*Chromium alloys, Thermodynamic properties), (*Nickel alloys, Thermodynamic properties), Electrolytes, Equilibrium, Solid solutions, Thorium oxides, Yttrium oxides, Iron alloys.

For abstract, see NSA 28 04, number 10620.

TRG-Report-2267/GA PC$3.50/MF$1.45
United Kingdom Atomic Energy Authority, Springfields (England). Reactor Group.
PREDICTION OF THE YIELD STRENGTH ON ISOTHERMAL AGEING OF THE PRECIPITATION HARDENING ALLOY NIMONIC PE16.
K. B. Smith. Feb 73, 28p
U.S. Sales Only.

Descriptors: (*Nimonic pe16, *Yield strength), Aging, High temperature, Isothermal processes, Precipitation hardening, Time dependence, Transition temperature, Very high temperature.

For abstract, see NSA 28 05, number 11221.

UCRL-74818/GA PC$7.50/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
SOME COMPUTATIONAL ASPECTS OF THIN WIRE MODELING.
E. K. Miller, and F. J. Deadrick. 19 Jun 73, 107p

Descriptors: (*Wires, *Mathematical models), Computers, Numerical solution.

For abstract, see NSA 28 06, number 15065.

11H. Oils, Lubricants, and Hydraulic Fluids

AD-767 898/0GA PC$3.00/MF$1.45
Air Force Materials Lab Wright-Patterson AFB Ohio
IMPROVED SILICONE FLUIDS AS CANDIDATE GAS TURBINE ENGINE OILS FOR-40 F TO 465F TO 465F TEMPERATURE RANGE.
Technical rept. Nov 71-Jul 72,
George J. Morris. Jul 73, 28p* Rept no. AFML-TR-73-72

Descriptors: (*Silicones, *Airplane engine oils), (*Gas turbines, *Lubricants), Fluorine compounds, Corrosion resistance, Vapor pressure, Viscosity, Thermal stability, Low-temperature lubricants.
Identifiers: Volatility, Poly(oxy-silylene/methyl-trifluoropropyl), Poly(oxy-silylene/dimethyl), *Polysiloxanes, Performance evaluation, Oxidation tests.

A physical and chemical laboratory study of several silicone fluids that represent some of the latest technology in the area has been conducted. These fluids were an alkyl methyl silicone, a trifluoropropyl methyl silicone and a methyl silicone improved by the use of additive formulation. These fluids were investigated for possible use as candidate gas turbine engine oils in the temperature range of -40F to +465F. The viscosity-temperature characteristics, volatility, oxidation stability, corrosion reactivity towards selected metals and lubrication capabilities were assessed for conformance with the recently established specification, MIL-L-27502, covering the aforementioned temperature range. The alkyl methyl silicone, although having favorable rheological and lubrication behavior, was so oxidatively unstable and corrosion prone that further study is not recommended. Both trifluoropropyl methyl silicone and improved methyl silicone have demonstrated sufficient oxidation and corrosion stability to warrant further study.

PATENT-3 720 611/GA Not available NTIS
Department of the Navy Washington D C
GELATION INHIBITED SILICONE FLUIDS.
Patent,
A. D. Britt. Filed 23 Mar 71, patented 13 Mar 73, 2p Rept nos. PAT-APPL-127 380,
Previously filed as PAT-APPL-22 083, 23 Mar 70.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Silicones, *Lubricant additives), (*Patents, Lubricant additives), Sodium compounds, Potassium compounds, Acetates, Decomposition, Lubricant additives, Halogenated hydrocarbons, Fluorine compounds.
Identifiers: PAT-CL-252-18, Sodium fluoroacetate, Acetic acid/(potassium-salt)-trifluoro.

The patent describes silicone fluids containing a small amount of alkali metal salt of trifluoroacetic acid which have reduced tendency to form gelatinous solids as they decompose at high temperature. The function of said metal salt is improved by the addition of a small amount of sodium hydroxide. Such fluids are commonly used as hydraulic fluids and lubricating oils in ship and aircraft mechanisms where extremes in temperature are common.

11I. Plastics

BDX-613-821(Rev.)/GA PC$3.00/MF$1.45
Bendix Corp., Kansas City, Mo.
MOISTURE EFFECTS ON THE THERMOSET MOLDING COMPOUNDS.
J. M. Conway. Mar 73, 19p
Contract AT(29-1)-613

Descriptors: Absorption, Molding, Resins, Water.

For abstract, see NSA 28 04, number 10512.

JINR-P8-6987/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
INVESTIGATION OF THE SHORT TERM DIELECTRICAL STRENGTH AND THE SERVICE TIME OF MYLAR INSULATION UNDER CRYOGENIC CONDITIONS.
N. G. Anishchenko, and V. F. Minein. 1973, 8p
In Russian. U.S. Sales Only.

Descriptors: (*Mylar, *Dielectric properties), Aging, Superconductivity, Ultralow temperature.

For abstract, see NSA 28 04, number 09494.

11K. Solvents, Cleaners, and Abrasives

PATENT-3 706 691/GA Not available NTIS
Department of the Navy Washington D C
DEPOTTING SOLVENT.
Patent,
James V. Duffy, and Porter W. Erickson. Filed 4 Sep 70, patented 19 Dec 72, 3p Rept nos. PAT-APPL-69 958,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Embedding substances, Removal), (*Patents, Organic solvents), Hydroxides.
Identifiers: Dissolving, PAT-CL-252-364.

The patent covers a process in which encapsulating (potting) compositions which contain a linkage that is susceptible to hydrolytic cleavage; i.e., polyamides, polyesters and polyester base type polyurethanes, and which have deteriorated due to exposure to a hot, moist atmosphere are dissolved by contacting with a solvent comprising a solution of benzyltrimethylammonium hydroxide preferably containing a constituent selected from the group consisting of (a) tetrahydrofuran and acetone, (b) methylene chloride (c) methylene chloride and acetone and (d) N-methyl-2-pyrollidone.

11L. Wood and Paper Products

PB-224 068/7GA PC$2.75/MF$1.45
North Central Forest Experiment Station, St. Paul, Minn.
PREDICTING SEGREGATION OF WOOD AND BARK CHIPS BY DIFFERENCES IN TERMINAL VELOCITIES.
Forest Service research paper (Final),
John A. Sturos. Sep 73, 13p FSRP-NC-90

Descriptors: (*Pulpwood, Separation), Chips, Bark, Flotation, Thickness, Density(Mass/Volume), Velocity measurement, Moisture content, Statistical analysis, Test methods.
Identifiers: Air flotation, Bark removal.

Air flotation is under study as a means to segregate bark chips from wood chips. The process depends on basic differences in terminal velocities that wood and bark chips attain while freely falling through air. The length, width, thickness, moisture content, specific gravity, and terminal velocity were measured for the bark and wood chips of eight important pulpwood species: aspen, sugar maple, jack pine, red pine, white spruce, balsam fir, splash pine and loblolly pine. Differences in the terminal velocities caused by other physical properties were used to predict the degree of segregation possible. The most promising species were aspen, sugar maple, balsam fir, and white spruce.

PB-224 101/6GA PC$3.00/MF$1.45
North Central Forest Experiment Station, St. Paul, Minn.
PULPWOOD PRODUCTION IN THE NORTH CENTRAL REGION BY COUNTY 1971.
Forest service Research bull. (Final),
James E. Blyth. Sep 73, 27p FSRB-NC-17

Descriptors: (*Pulpwood, Production capacity), Statistical data, Hardwoods, Softwoods, Pulp mills, Demand(Economics), United States.

Lake States pulpwood production fell to 4,615,000 cords in 1971, more than one-quarter million cords below the 1970 level. Harvests of all reported species groups declined, although the drop was minimal for pine. Forty-three Lake States plants received 4.3 million cords of pulpwood in 1971. Spruce and hemlock receipts were the lowest they have been in a quarter century. Softwood residue procurement rose to a new high for the sixth straight year. Demand for hardwood residue boosted Central States pulpwood production to 421,000 cords. Hardwood residue now equals hardwood roundwood in importance as a component of pulpwood output. Fourteen Central States plants procured 338,000 cords in 1971; 14% was imported from other states. Total pulping capacity at these plants was about 1,500 tons per day.

12. MATHEMATICAL SCIENCES

N73-29181/7GA PC$3.50/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
A VISUAL STUDY OF RADIAL INWARD CHOKED FLOW OF LIQUID NITROGEN.
R. C. Hendricks, R. J. Simoneau, and Y. Y. Hsu. 1973, 29p NASA-TM-X-68283, E-7605
Conf-Presented at the Cryog. Eng. Conf., Atlanta, 8-10 Aug. 1973.

Descriptors: *Chokes (Restrictions), *Flow characteristics, *Fluid flow, *Liquid nitrogen, Data acquisition, Flow equations, Jet impingement, Nozzle flow.

For abstract, see STAR 1120

N73-29182/5GA PC$13.25/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
COMPUTER PROGRAMS FOR CALCULATING POTENTIAL FLOW IN PROPULSION SYSTEM INLETS.
N. O. Stockman, and S. L. Button. 1973, 224p NASA-TM-X-68278

Descriptors: *Computer programs, *Engine inlets, *Flow geometry, *Inlet flow, *Short takeoff aircraft, *V/stol aircraft, Aerodynamic configurations, Pressure gradients, Systems engineering.

For abstract, see STAR 1120

N73-29183/3GA PC$4.25/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
VELOCITY DECAY AND ACOUSTIC CHARACTERISTICS OF VARIOUS NOZZLE GEOMETRIES WITH FORWARD VELOCITY.
U. Vonglahn, D. Groesbeck, and J. Goodykoontz. 1973, 42p NASA-TM-X-68259, E-7547
Conf-Presented at 6TH Fluid and Plasma Dyn. Conf., Palm Springs, Calif., 16-18 Jul. 1973, Sponsored by Aiaa.

Descriptors: *Aerodynamic noise, *Jet aircraft noise, *Noise reduction, *Nozzle design, Acoustic measurements, Test stands, Wind tunnels.

For abstract, see STAR 1120

N73-29184/1GA PC$5.00/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
MOLECULAR FLUX MEASUREMENTS IN THE BACK FLOW REGION OF A NOZZLE PLUME.
J. E. Chirivella. 15 Jul 73, 58p NASA-CR-133602, JPL-TM-33-620
Contract NAS7-100

Descriptors: *Flux density, *High vacuum, *Rocket exhaust, Boundary layers, Far fields, Nozzle design.

For abstract, see STAR 1120

N73-29185/8GA PC$6.25/MF$1.45
Maryland Univ., College Park. Dept. of Aerospace Engineering.
TWO-DIMENSIONAL LAMINAR INCOMPRESSIBLE SEPARATED FLOW PAST AIRFOILS.
A. Plotkin. Jul 73, 82p NASA-CR-114656, AE-73-1
Contract NGR-21-002-266

Descriptors: *Air flow, *Incompressible flow, *Thin airfoils, *Two dimensional flow, Boundary layer flow, Flow characteristics, Flow equations.

For abstract, see STAR 1120

N73-29186/6GA PC$7.00/MF$1.45
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
INTERACTION BETWEEN A HIGH SPEED BOUNDARY LAYER FLOW AND AN INELASTIC DEFORMABLE SOLID WALL.
H. W. Stock. May 73, 100p TN-86

Descriptors: *Pressure distribution, *Shear stress, *Supersonic flow, *Turbulent boundary layer, *Wall flow, Flow characteristics, Flow equations, Numerical analysis.

For abstract, see STAR 1120

N73-29187/4GA PC$5.00/MF$1.45
Toronto Univ. (Ontario). Inst. for Aerospace Studies.
EXPERIMENTAL SIMULATION OF THE INTERACTION OF WIND DRIVEN PRECIPITATION WITH AN ANNULAR AIR CURTAIN DOME.
R. Lake, and B. Etkin. Mar 73, 59p UTIAS-TN-182
Subm-Sponsored by Natl. Res. Council.

Descriptors: *Air ducts, *Air flow, *Air jets, *Rain, *Wind effects, Equations of motion, Flow characteristics, Pressure distribution.

For abstract, see STAR 1120

N73-29188/2GA PC$14.00/MF$1.45
Southwest Research Inst., San Antonio, Tex.
ANALYSIS OF PROPELLANT FEEDLINE DYNAMICS.
Final Report.
J. L. Holster, W. J. Astleford, and C. R. Gerlach. May 73, 236p
Contracts NAS8-25919, SWRI PROJ. 02-2889

Descriptors: *Computer programs, *Liquid rocket propellants, *Mathematical models, *Propellant transfer, Fluid dynamics, Pressure gradients, Resonant frequencies, Turbulent flow.

For abstract, see STAR 1120

12A. Mathematics and Statistics

AD-767 697/6GA PC$3.00/MF$1.45
Naval Postgraduate School Monterey Calif
SECOND ORDER NECESSARY CONDITIONS FOR PROBLEMS WITH STATE INEQUALITY CONSTRAINTS.
Technical rept.,
I. Bert Russak. Jun 73, 34p Rept no. NPS-53RU73061A

Descriptors: (*Adaptive control systems, Mathematical models), Partial differential equations, Calculus of variations, Matrix algebra, Theorems, Optimization, Inequalities.
Identifiers: *Control theory, Automatic control.

A set of second order necessary conditions is obtained for solution to a basic problem in optimal control involving the state constraints psi sup alpha (t,x) < or = 0 alpha = 1,...,m. For the case of a normal solution arc, the methods of Hestenes are used to show that the second variation of a certain functional is non-negative on a class of variations of the solution arc. The results for this problem are basic in the sense that they can be extended to include analagous results for much more complicated problems. (Author)

AD-767 702/4GA PC$2.75/MF$1.45
Carnegie-Mellon Univ Pittsburgh Pa Dept of Computer Science
ON COMPUTING RECIPROCALS OF POWER SERIES,
H. T. Kung. Sep 73, 18p
Contract N00014-67-A-0314-0010, Grant NSF-GJ-32111

Descriptors: (*Iterations, *Power series), Algorithms, Polynomials.
Identifiers: Computation, Arithmetic.

Root-finding iterations are used to compute reciprocals of power series. The author shows that Sieveking's algorithm is just Newton iteration applied in the field of power series. Let (L sub n) denote the number of non-scalar multiplications needed to compute the first n+1 terms of the reciprocal. It is shown that n+1 < or = (L sub n) < or = 4n-log (base 2) n. It is conjectured that (L sub n) = 4n - lower order terms. (Modified author abstract)

AD-767 703/2GA PC$2.75/MF$1.45
Carnegie-Mellon Univ Pittsburgh Pa Dept of Computer Science
A NEW UPPER BOUND ON THE COMPLEXITY OF DERIVATIVE EVALUATION,
H. T. Kung. Sep 73, 9p
Contract N00014-67-A-0314-0010, Grant NSF-GJ-32111

Descriptors: (*Interpolation, Algorithms), Complex numbers, Polynomials, Iterations, Theorems.
Identifiers: *Arithmetic, Fast Fourier transform, Fourier transformation.

Let T(n) denote the number of arithmetic operations needed to evaluate the normalized derivatives (P sub (i)) (t)/i factorial, i = 0,...,n, for an nth degree polynomial p(t) over the field of complex numbers. The author shows T(n) < or = 1/2 c n log squared n + lower order terms where c may be taken as 12. (Author)

AD-767 725/5GA PC$3.25/MF$1.45
Brown Univ Providence R I Div of Applied Mathematics
A COLLOCATION METHOD FOR TWO-POINT BOUNDARY VALUE PROBLEMS,
John H. Ahlberg, and T. Ito. Aug 73, 24p
Contract N00014-67-A-0191-0015

Descriptors: (*Differential equations, Numerical analysis), Boundary value problems, Interpolation, Calculus of variations, Integration, Theorems.
Identifiers: *Two point boundary value problems, Spline functions, Cubic spline technique, Galerkin method, Collocation(Mathematics), Numerical integration.

The report is concerned with the use of collocation by splines to numerically solve two-point boundary-value problems. The problem is analyzed in terms of cubic splines first and then extended to the use of quintic and septic splines. Consideration is given both to convergences as the mesh is refined and to the bandwidth of the matrices involved. Comparisons are made to a similar approach using the Galerkin method rather than collocation. (Author)

AD-767 730/5GA PC$3.75/MF$1.45
Massachusetts Inst of Tech Cambridge Project Mac
COMPLEXITY CLASSES OF RECURSIVE FUNCTIONS.
Interim scientific rept.,
Robert Moll. Jun 73, 97p Rept no. MAC-TR-110
Contract N00014-70-A-0362-0001, Grant NSF-GJ-34671

Descriptors: (*Mathematical logic, *Recursive functions), Set theory, Sequences, Theorems, Theses.
Identifiers: MAC project, Imbeddings(Mathematics), Turing machines, Computational complexity, Honesty theorem, Honest functions.

The report is divided into three parts. In part one the properties of honest functions and measured sets as defined by Blum, Meyer and McCreight are

developed. An improved proof of the honesty theorem is given and several open problems are solved. In part two the author proves an operator embedding theorem for complexity classes of recursive functions. In part three an extensive survey of research on subrecursive hierarchies is given. (Modified author abstract)

AD-767 748/4GA Reprint
California Univ Santa Barbara Dept of Mathematics
ON THE SINGULAR VALUES OF MATRIX PRODUCTS. III.,
R. C. Thompson, and S. Therianos. 1 Dec 70, 10p AFOSR-TR-73-1895
Grant AF-AFOSR-698-67
Availability: Pub. in Scripta Mathematica, v29 n1-2 p115-123 1970.

Descriptors: (*Matrix algebra, *Inequalities), Determinants, Theorems.
Identifiers: Eigenvalues, Hermitian matrices.

The paper establishes the singular values counterparts for matrix products of a class of inequalities established by Horn for the eigenvalues of sums of Hermitian matrices. (Author)

AD-767 742/0GA Reprint
Hawaii Univ Honolulu Dept of Physics and Astronomy
MODIFIED CONCEPTS OF LOGIC PROBABILITY, AND INFORMATION BASED ON GENERALIZED CONTINUOUS CHARACTERISTIC FUNCTION,
Satosi Watanabe. 19 May 69, 24p AFOSR-TR-73-1717
Grant AF-AFOSR-1466-68
Revision of report dated 7 Nov 68.
Availability: Pub. in the Information and Control, v15 n1 p1-21 Jul 69.

Descriptors: (*Mathematical logic, Functions), Set theory, Information theory, Probability, Theorems.
Identifiers: Boolean algebra.

All the basic laws of the traditional logic can be derived from the characteristic function f (A/a) which is 1 or 0 according as object a satisfies predicate A or not. There is good reason to believe that it is worthwhile to extend this formalism to the case where f (A/a) can take any value in the continuous domain (0, 1). The implications of this generalization to the concepts of logic, probability and information theory are studied. (Author)

AD-767 767/7GA PC$3.00/MF$1.45
Northwestern Univ Evanston Ill Dept of Electrical Engineering
CONNECTIVITY CONSIDERATIONS IN THE DESIGN OF NETWORKS.
Interim rept.,
S. L. Hakimi. May 73, 13p AFOSR-TR-73-1687
Grant AF-AFOSR-2103-71

Descriptors: (*Graphics, Theorems), Networks, Set theory, Design.
Identifiers: *Graph theory, *Connectivity(Graphics), Network syntheses.

The notion of a connectivity of a graph is defined. Some basic graph theoretic results are stated. Applications of these results to the problem of design of invulnerable, survivable and reliable networks are discussed. Important pure and applied unsolved problems in this area and their variations are described. (Author)

AD-767 769/3GA Reprint
Massachusetts Inst of Tech Cambridge Dept of Electrical Engineering
ON LINEAR STOCHASTIC SYSTEMS WITH COUPLED MEASUREMENT AND DYNAMIC CONTROL,
L. C. Kramer, and M. Athans. 26 May 72, 15p AFOSR-TR-73-1667
Grant AF-AFOSR-1941-70
Presented at the Annual Princeton Conference on Information Sciences and Systems (6th), Princeton, N.J., Mar 72.
Availability: Pub. in Ricerche di Automatica, v3 n2 p144-157 Aug 72.

Descriptors: (*Adaptive control systems, Mathematical models), Linear systems, Stochastic processes, Dynamic programming.
Identifiers: *Control theory, Automatic control.

A class of stochastic systems is described for which dynamic control can be applied at a given time if and only if a noisy measurement of the system state is also made at that time. It is assumed that there is a cost associated with applying dynamic control and with taking measurements. An overall stochastic optimization problem is formulated and solved. (Author)

AD-767 770/1GA Reprint
Illinois Univ Urbana Dept of Mathematics
OPTIMAL, FIXED LENGTH, NONPARAMETRIC SEQUENTIAL CONFIDENCE LIMITS FOR A TRANSLATION PARAMETER,
L. Weiss, and J. Wolfowitz. 10 Sep 71, 8p AFOSR-TR-73-1681
Grant AF-AFOSR-1947-70
Prepared in cooperation with Cornell Univ., Ithaca. Dept. of Operations Research, Grant NSF-GP-21184.
Availability: Pub. in Z. Wahrscheinlichkeitstheorie verw. Geb., v24 p203-209 1972.

Descriptors: (*Statistical distributions, *Confidence limits), Random variables, Regression analysis.
Identifiers: Nonparametric statistics.

The authors give sequential confidence limits which, for large samples of n observations, are the best possible among those based on the middle n(q-p) observations. In particular, they are therefore better than those of Chen and Robbins (1965) and Sen and Ghosh (1971) based on the same observations. Using the results of a paper just written by J. Wolfowitz, these results can now be improved so as to be based on all n observations. (Author)

AD-767 773/5GA Reprint
Princeton Univ N J Dept of Electrical Engineering
ON LOCAL ROUNDOFF ERRORS IN FLOATING-POINT ARITHMETIC,
Toyohisa Kaneko, and Bede Liu. Jun 72, 9p AFOSR-TR-73-1676
Grants AF-AFOSR-2101-71, NSF-GK-24187
Revision of report dated Oct 71.
Availability: Pub. in Jnl. of the Association for Computing Machinery, v20 n3 p391-398 Jul 73.

Descriptors: (*Binary arithmetic, Errors), Statistical analysis, Digital computers, Programming(Computers).
Identifiers: Floating point operation, *Arithmetic, Radix conversion, IBM 360 computers, Round off errors.

A bound on the relative error in floating-point addition using a single-precision accumulator with guard digits is derived. It is shown that even with a single guard digit, the accuracy can be almost as good as than using a double-precision accumulator. A statistical model for the roundoff error in double-precision multiplication and addition is also derived. The model is confirmed by experimental measurements. (Author)

AD-767 776/8GA Reprint
Yale Univ New Haven Conn Dept of Engineering and Applied Science
STRUCTURE AND DESIGN OF LINEAR MODEL FOLLOWING SYSTEMS,
A. Stephen Morse. 23 Mar 73, 10p AFOSR-TR-73-1855
Grant AF-AFOSR-2211-72
Revision of report dated 3 Jul 72.
Availability: Pub. in IEEE Transactions on Automatic Control, vAC-18 n4 p346-354 Aug 73.

Descriptors: (*Adaptive control systems, Mathematical models), Linear systems, Matrix algebra, Set theory, Theorems.
Identifiers: *Control theory, Automatic control.

The paper investigates the problem of designing a compensating control for a linear multivariable system so that the impulse response matrix of the resulting closed-loop system coincides with the impulse response matrix of a prespecified linear model; this is the model following problem. A new formulation of the problem is developed, and necessary and sufficient conditions for a solution to exist are given. An upper bound is determined for the number of integrators needed to construct the compensating control and, if the open-loop plant in question possesses a left-invertible transfer matrix, this bound is shown to be as small as possible. The relationship between the internal structure of a model following system and the model being followed is explained, and a description is given of the possible distributions of system eigenvalues which can be achieved while maintaining a model following configuration. This leads to a statement of necessary and sufficient conditions for the existence of a solution to the problem which results in a stable compensated system. (Author)

AD-767 779/2GA Reprint
Pittsburgh Univ Pa Dept of Mathematics
BAYESIAN ANALYSIS OF THE TWO-SAMPLE PROBLEM WITH INCOMPLETE DATA,
Robert H. Lochner, and A. P. Basu. Jun 71, 9p AFOSR-TR-73-1654
Grant AF-AFOSR-2352-72
Availability: Pub. in Jnl. of the American Statistical Association, v67 n338 p432-438 Jun 72.

Descriptors: (*Statistical analysis, Population(Mathematics)), Sampling, Distribution functions, Reliability, Mathematical models.
Identifiers: Bayesian analysis, Parametric statistics, Nonparametric statistics.

AD-767 811/3GA PC$2.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
INTEGRAL AND SERIES ANALOGUES AND THE CONSTRUCTION OF DISCRETE FOURIER TRANSFORM PAIRS.
Memo.,
Brian W. Conolly. 15 Aug 73, 12p Rept no. SACLANTCEN-SM-20

Descriptors: (*Integral transforms, Fourier analysis), Series, Integration, Approximation(Mathematics), Italy.
Identifiers: Fourier transformation, Fast Fourier transform, Fourier series, Numerical integration.

A short review is made of some recent work on a class of infinite integrals with analogous series, both having a common value. When such equivalents are found to exist it is extremely convenient for numerical evaluation of the integral and for checking. A discussion is then given of analogous finite integrals and sums, and this leads to a method for the construction of Discrete Fourier Transform pairs. Examples are given. The existence of such pairs is convenient for computer programm checking and timing, especially in connection with Fast Fourier Transform algorithms. (Author)

AD-767 874/1GA PC$22.75/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering

UNBIASED NEARLY BEST LINEAR CONDITIONAL ESTIMATES OF THE SCALE AND LOCATION PARAMETERS OF THE EXTREME VALUE DISTRIBUTION BY THE USE OF ORDER STATISTICS.
Master's thesis,
Milton D. Kingcaid. Dec 69, 415p Rept no. GRE/MATH/69-5

Descriptors: (*Reliability, *Statistical analysis), Sampling, Distribution functions, Matrix algebra, Tables, Theses.
Identifiers: *Parameter estimation, *Order statistics, Weibull density functions, Life tests.

Unbiased, nearly best, linear, conditional estimates of the scale and location parameters of the (first) extreme value distribution of largest values are developed with the use of order statistics. Coefficients of the estimators are calculated and tabled for sample sizes from one to forty. The tables include coefficients of estimators for complete samples along with coefficients for samples equally censored from both ends. These coefficients can also be used to simultaneously estimate both parameters when neither is known. (Author)

AD-767 966/5GA PC$3.50/MF$1.45
North Carolina Univ Chapel Hill Dept of Statistics
EQUIVALENT GAUSSIAN MEASURES WHOSE R-N DERIVATIVE IS THE EXPONENTIAL OF A DIAGONAL FORM.
Technical rept.,
Balram S. Rajput. Mar 73, 30p Rept no. Mimeo Ser-865
Contract N00014-67-A-0321-0002, Grant AF-AFOSR-1415-68

Descriptors: (*Stochastic processes, Measure theory), Exponential functions, Hilbert space, Set theory, Theorems.
Identifiers: Gaussian measures, Radon-Nikodym theorem, Probability measures.

A simple necessary and sufficient condition, on a trace-class kernel K, is given in order for the existence of a measurable (relative to the complete product sigma-algebra) Gaussian process with covariance K. The integral of the exponential of a certain function of a Gaussian process with respect to the corresponding probability measure is calculated, explicitely. Using these results, sufficient conditions are given on the means and the covariances (relative to two equivalent Gaussian measures P and (P sub lambda)) of a process X so that the Radon-Nikodym (R-N) derivative d(P sub lambda)/dP is the exponential of the diagonal form in X. Analogues of the last two results in the set up of Hilbert space are also proved. Using one of these results, a simple proof of the integrability of the exponential of a certain multiple of the square of any continuous seminorm relative to Gaussian measure on separable nuclear space is given. (Author)

AD-767 967/3GA PC$3.00/MF$1.45
North Carolina Univ Chapel Hill Dept of Statistics
RENEWAL THEORY IN TWO DIMENSIONS: ASYMPTOTIC RESULTS.
Technical rept.,
Jeffrey J. Hunter. May 73, 33p Rept no. Mimeo Ser-868
Contract N00014-67-A-0321-0002, Grant NSF-GU-2059

Descriptors: (*Statistical processes, Random variables), Distribution functions, Asymptotic series, Correlation techniques, Theorems.
Identifiers: *Renewal theory, Bivariate analysis, Central limit theorem.

In an earlier paper (Renewal theory in two dimensions: Basic results) the author developed a unified theory for the study of bivariate renewal processes. In contrast to this aforementioned work where explicit expressions were obtained; the author develops some asymptotic results concerning the joint distribution of the bivariate renewal counting process ((N sub x)1, (N sub y)2); the distribution of the two dimensional renewal counting process N sub x,y and the two dimensional renewal function (N sub x,y). A by-product of the investigation is the study of the distribution and moments of the minimum of two correlated normal random variables. A comprehensive bibliography of multidimensional renewal theory is also appended. (Author)

AD-767 970/7GA PC$3.50/MF$1.45
Stanford Univ Calif Dept of Computer Science
NONLINEAR SPLINE FUNCTIONS,
Michael A. Malcolm. Jun 73, 66p Rept no. STAN-CS-73-372
Contract N00014-67-A-0112-0029, Grant NSF-GJ-29988X

Descriptors: (*Interpolation, Functions), Calculus of variations, Difference equations, Transcendental functions, Matrix algebra, Computer programs, Strain(Mechanics), Elasticity.
Identifiers: *Spline functions, *Spline interpolation, *Nonlinear spline functions, FORTRAN, Finite difference theory.

A mathematical characterization of nonlinear interpolating spline curves is developed through a variational calculus approach, based on the Euler-Bernoulli large-deflection theory for the bending of thin beams or elastica. Algorithms previously used for computing discrete approximations of nonlinear interpolating splines are discussed and compared. The discrete natural cubic interpolating spline is discussed. An algorithm for computing discrete natural cubic splines is given and analyzed for discretization error and computational difficulty. Finally, a new algorithm together with its FORTRAN implementation is given for computing discrete nonlinear spline functions. (Author)

AD-768 033/3GA PC$2.75/MF$1.45
George Washington Univ Washington D C Program in Logistics
SOME INEQUALITIES FOR CONCAVE FUNCTIONS OF ORDER STATISTICS FROM IFR (INCREASING FAILURE RATE) DISTRIBUTIONS,
Robert A. Brown, and Nozer D. Singpurwalla. 20 Sep 73, 16p Rept no. Serial-T-290
Contract N00014-67-A-0214-0001

Descriptors: (*Statistical functions, Inequalities), (*Sampling, Distribution functions), Random variables, Stochastic processes, Convex sets, Theorems.
Identifiers: *Order statistics, Concave functions, Exponential density functions.

In the paper the authors consider functions which are the sum of the k largest order statistics in a sample of size n from a continuous distribution F, minus nh, where h is a specified constant. It is proven that such functions are concave in n. If F is an exponential distribution, then for a fixed k the authors obtain that value of n which maximizes the expected value of the function defined above. For F IFR an upper bound is obtained on n and also an upper bound on the maximum of the expected value of the function. Some other inequalities are also obtained. (Modified author abstract)

AD-768 034/1GA PC$3.50/MF$1.45
Chicago Univ Ill Lab for Atmospheric Probing
ESTIMATION OF THE AVERAGE FREQUENCY OF A RANDOM PROCESS.
Doctoral thesis,
John Joseph Herro. May 73, 71p Rept no. TR-31
Contract N00014-67-A-0285-0014
Prepared in cooperation with Illinois Inst. of Tech., Chicago. Dept. of Electrical Engineering.

Descriptors: (*Atmospheric precipitation, *Radar reflections), (*Information theory, Time series analysis), Doppler radar, Stochastic processes, Power spectra, Doppler effect, Signal-to-noise ratio, Analog-to-digital converters, Phase shift, Transfer functions, Probability density functions, Theses.
Identifiers: *Random processes, Autocorrelation, Waveforms, Signal processing, Estimation theory.

The purpose of the report is to develop a means of estimating, in real time, the average frequency of a random process, given only a time-limited sample of that process. The average frequency of a random process is defined in terms of the power spectral density. Previous estimators of average frequency were mathematically based on estimating the power spectral density. In this work, the average frequency is expressed in terms of the autocorrelation and cross-correlation functions, and a new estimator is obtained which is based on estimates of these correlation functions. Two estimators presented in the literature and the proposed estimator are compared, and expressions are obtained for the power spectral density and autocorrelation function at each point in the systems, exclusive of the outputs. Approximate expressions are obtained for the bias and variance of the proposed estimator and one of the referenced estimators. A lab model of the proposed device was constructed and tested under several sets of operating conditions. It is found that, under typical operating conditions, the proposed estimator performs almost as well as those proposed earlier, and is simpler in form. For very short samples of the random process, however, the difference in variance becomes more noticeable. (Author)

AD-768 044/0GA PC$18.75/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
LECTURES ON THE THEORY OF ORDINARY DIFFERENTIAL EQUATIONS,
I. G. Petrovskii. 20 Aug 73, 331p Rept no. FTD-HC-23-1177-72
Edited trans. of mono. Lektsii po Teorii Obyknovennykh Differentsialnykh Uravenii, n.p., 1970 p1-279.

Descriptors: (*Differential equations, Textbooks), Nonlinear differential equations, Partial differential equations, Cauchy problem, Analytic functions, Mapping(Transformations), Matrix algebra, Numerical analysis, Theorems, Integral equations, Integration, USSR.
Identifiers: Translations, Numerical integration, Existence theorems, Uniqueness theorems, Canonical forms, Lyapunov functions, Ordinary differential equations.

The report is a textbook for a course on ordinary differential equations. The carefully prepared presentation makes it possible to present a great deal of material in a small volume. Equations of simple types are examined in great detail. The general theories on the solutions of equations and systems of equations with continuous right parts are presented in detail. The theory of linear equations is accompanied by an original presentation of the canonical form of the systems. The book includes a chapter on independent systems, and the appendix contains the theory of linear and nonlinear equations with partial derivatives of the first order. A large number of problems greatly expands the contents of the book. (Modified author abstract)

AD-768 266/9GA Reprint
Michigan Univ Ann Arbor Dept of Mathematics
A SURVEY OF GRAPHICAL ENUMERATION PROBLEMS,
Frank Harary, and Edgar M. Palmer. 1973, 19p
AFOSR-TR-73-1848
Grant AF-AFOSR-2502-73
Availability: Pub. in A Survey of Combinatorial Theory, ch21 p259-275 1973.

Descriptors: (*Graphics, Reviews), Number theory, Topology, Set theory, Combinatorial analysis.

Identifiers: *Graph theory, Enumeration theory.

The authors present a wide range of graphical enumeration problems, far more comprehensive than any which has appeared previously. Although various sophisticated, recondite, and specialized terminology may confuse the situation, the fact is that very many pattern and configuration problems become graphical in nature when properly reformulated. Furthermore, the conceptual difficulty of the problem is more easily identified when recast in terms of graphs or variations on graphs. Within the hundreds of problems indicated, there is adequate material to occupy research scholars for generations. (Author)

AD-768 271/9GA Reprint
Michigan Univ Ann Arbor Dept of Mathematics
THE NUMBER OF TREES IN A WHEEL,
Frank Harary, Peter O'Neil, Ronald C. Read, and Allen J. Schwenk. 1973, 10p AFOSR-TR-73-1849
Grant AF-AFOSR-1515-68
Availability: Pub. in Combinatorics, Inst. for Mathematics and Applications, Southend-on-Sea, p155-163 1973.

Descriptors: (*Graphics, Theorems), Topology, Matrix algebra.
Identifiers: Trees(Mathematics), *Graph theory, Cayley equations.

Cayley's classic results enumerating labelled and unlabelled trees may be viewed as counting the number of nonisomorphic spanning trees in a complete graph. Analogous methods serve to derive a generating function for the number of unlabelled spanning trees in a wheel, complementing previous results on the number of labelled spanning trees. The exact numbers of unlabelled trees for small n have been calculated by computer. (Author)

AD-768 282/6GA PC$3.25/MF$1.45
Cornell Univ Ithaca N Y Dept of Operations Research
PARETO SURFACES OF COMPLEXITY 1.
Technical rept.,
Louis J. Billera, and Robert E. Bixby. Aug 73, 24p
Rept no. TR-193
Contract N00014-67-A-0077-0014, Grant NSF-GP-32314
Errata sheet attached. Prepared in cooperation with Kentucky Univ., Lexington. Dept. of Mathematics.

Descriptors: (*Set theory, Theorems), Convex sets, Game theory, Economics, Mathematical models.
Identifiers: Pareto surfaces.

Pareto surfaces and attainable sets of complexity 1 (i.e., those having a 1-commodity representation and no 0-commodity representation) are discussed. An implicit characterization of these sets is given, and various of their properties are derived. In particular, Pareto surfaces of complexity at most 1 are always closed sets. (Author)

ANL-7838/GA PC$5.45/MF$1.45
Argonne National Lab., Ill.
APPLIED MATHEMATICS DIVISION SUMMARY REPORT, JUNE 1972.
1972, 83p
Contract W-31-109-eng-38

Descriptors: (*Programming languages, *Research programs), (*Mathematics, Research programs), (*Computers, Research programs), Computer calculations.

For abstract, see NSA 28 04, number 10494.

CONF-730812-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
COMPUTER CONSTRUCTION OF SMALL "D-OPTIMAL" INCOMPLETE BLOCK DESIGNS.
T. J. Mitchell. 1972, 7p

Descriptors: (*Design, *Algorithms), Computers, Mathematical models, Matrices, Planning.

For abstract, see NSA 28 06, number 15046.

COO-2271-5/GA PC$3.00/MF$1.45
Columbia Univ., New York. Dept. Of Physics.
ENDPOINT DISTRIBUTION OF SELF-AVOIDING WALKS.
R. Grishman. 19p

Descriptors: Algorithms, Mathematics, Statistics.

For abstract, see NSA 28 04, number 10495.

JEN-254/GA PC$3.00/MF$1.45
Junta de Energia Nuclear, Madrid (Spain).
INTEGRATION IN FUNCTIONAL SPACES.
A. Colino. 1972, 13p
In Spanish. U.S. Sales Only.

Descriptors: Functionals, Integrals, Mathematical space.

For abstract, see NSA 28 04, number 10572.

KFKI-73-6/GA PC$3.00/MF$1.45
Magyar Tudomanyos Akademia Kozponti Fizikai Kutato Intezete, Budapest.
LAURENT EXPANSION OF THE INVERSE OF A FUNCTION MATRIX.
C. J. Hegedus. Mar 73, 19p
U.S. Sales Only.

Descriptors: (*Matrices, *Series expansion), Functions, Integral equations.

For abstract, see NSA 28 04, number 10502.

LA-5254-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
SMALL PARTICLE STATISTICS. THE ANALYSIS OF PARTICLE "SIZE" DATA.
H. D. Lewis. May 73, 20p
Contract W-7405-eng-36

Descriptors: (*Statistics, *Particle size), (*Particles, Statistics).

For abstract, see NSA 28 06, number 15142.

LBL-1335/GA PC$7.60/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
FIBONACCI RESIDUE CYCLES.
L. P. Meissner. Oct 72, 295p
Contract W-7405-eng-48

Descriptors: (*Mathematics, *Randomness).

For abstract, see NSA 28 04, number 10503.

NP-19783/GA PC$5.25/MF$1.45
Technische Hogeschool, Delft (Netherlands).
GENERALIZATIONS OF THE BILATERAL LAPLACE TRANSFORM.
H. Lemei. 65p
U.S. Sales Only.

Descriptors: Analytical solution, Laplace transformation, Mathematics.

For abstract, see NSA 28 05, number 12568.

N73-29578/4GA PC$8.50/MF$1.45
Houston Univ., Tex. Dept. of Mathematics.
VARIED STATISTICAL PROBLEMS AND TESTS, VOLUME 2.
Final Report, 1 May 1972 - 30 Apr. 1973.
30 Apr 73, 129p NASA-CR-128990
Contract NAS9-12777

Descriptors: *Divergence, *Information theory, *Matrices (Mathematics), *Multivariate statistical analysis, *Probability theory, Algorithms, Covariance, Inversions, Population theory, Subroutines, Theorem proving, Transformations (Mathematics).

For abstract, see STAR 1120

N73-29599/0GA PC$3.00/MF$1.45
Research Inst. of National Defence, Stockholm (Sweden).
NONITERATIVE ESTIMATION OF A NONLINEAR PARAMETER.
A. Bergstroem. Apr 73, 8p NASA-CR-133728, FOA-4-B-4059-M4
Contract NGR-44-07-007
Subm-Prepared in Cooperation with Southern Methodist Univ.

Descriptors: *Algorithms, *Functions (Mathematics), *Iterative solution, *Nonlinearity, Approximation, Independent variables, Mathematical models.

For abstract, see STAR 1120

N73-29600/6GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
IMPROVING THE ACCURACY OF ANGULAR-MOMENTUM PROJECTION.
W. F. Ford. Aug 73, 10p NASA-TM-X-2875, E-7483

Descriptors: *Angular momentum, *Nuclear physics, *Truncation errors, Harmonic analysis, Orthogonal functions, Oscillations.

For abstract, see STAR 1120

N73-29990/1GA PC$3.25/MF$1.45
New York State Univ., Albany. Dept. of Electrical Engineering.
DEVELOPMENT OF GUIDELINES FOR THE DEFINITION OF THE RELAVANT INFORMATION CONTENT IN DATA CLASSES.
Final Report.
E. Schmitt. Apr 73, 24p NASA-CR-124356
Contract NAS8-28264

Descriptors: *Data correlation, *Data management, *Data systems, *Information theory, Applications of mathematics, Mathematical models, Numerical analysis.

For abstract, see STAR 1120

ORNL-TM-4258/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
PROGRAM TO EVALUATE THE SECOND FORM OF THE CONFLUENT HYPERGEOMETRIC FUNCTION.
N. M. Larson, and I. J. Lucas. Jul 73, 20p
Contract W-7405-eng-26

Descriptors: (*Hypergeometric functions, *Computer codes), Differential equations, K codes, K codes, Numerical solution.

For abstract, see NSA 28 06, number 15053.

ORNL-4851/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
MATHEMATICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1972.
Apr 73, 302p
Contract W-7405-eng-26

Descriptors: (*Mathematics, *Research programs), (*Computers, Research programs), Ornl.

For abstract, see NSA 28 05, number 12488.

ORNL-4876/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
PERCENTAGE POINTS OF MOMENT ESTIMATORS WHICH ARE RATIOS WITH AN APPLICATION TO THE SHAPE PARAMETER OF THE GAMMA DISTRIBUTION.
W. E. Dusenberry, and K. O. Bowman. May 73, 205p
Contract W-7405-eng-26

Descriptors: Computer codes, Distribution, Functions, Mathematics.

For abstract, see NSA 28 04, number 10504.

ORO-3443-44/GA PC$3.50/MF$1.45
Maryland Univ., College Park. Inst. For Fluid Dynamics and Applied Mathematics.
NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS.
I. Babuska. Mar 73, 26p CONF-730429-1, BN-761
Contract AT(40-1)-3443

Descriptors: (*Differential equations, *Numerical solution), Finite element method, Functions.

For abstract, see NSA 28 04, number 10505.

PB-223 896/2GA PC$3.00/MF$1.45
Stanford Univ., Calif. Dept. of Computer Science.
A NOTE ON A COMBINATORIAL PROBLEM OF BURNETT AND COFFMAN.
Technical note no. 25,
Harold S. Stone. Apr 73, 10p STAN-CS-73-359
Grant NSF-GJ-1180

Descriptors: (*Combinatorial analysis, Sequences(Mathematics)), Markov processes, Permutations.

A problem arising in the analysis of interleaved memories is shown to be identical to a well-known problem in the combinatorial literature. The former problem concerns the number of sequences of length k drawn from the integers (1,2,...,n) such that each sequence contains distinct integers and does not contain a subsequence of the form (...i,i+1,...). The corresponding combinatorial problem concerns derangements, that is, the class of permutations in chich no element is left invariant by the permutation. In the interleaved memory problem, when k=n, the number of sequences is n:/e, which is the same as the number of derangements on n letters. (Author)

PB-223 897/0GA PC$6.50/MF$1.45
Stanford Univ., Calif. Dept. of Computer Science.
HIGH ORDER FINITE DIFFERENCE SOLUTION OF DIFFERENTIAL EQUATIONS.
Technical rept.,
Victor Pereyra. Apr 73, 89p STAN-CS-73-348, SU-326P30-26
Grant NSF-GJ-35135

Descriptors: (*Boundary value problems, *Finite difference theory), (*Nonlinear differential equations, Numerical integration), Approximation, Extrapolation, Matrices(Mathematics), Inequalities, Computer programs, Theorems, FORTRAN.
Identifiers: *Two point boundary value problems.

These seminar notes give a detailed treatment of finite difference approximations to smooth nonlinear two-point boundary value problems for second order differential equations. Consistency, stability, convergence, and asymptotic expansions are discussed. Most results are stated in such a way as to indicate extensions to more general problems. Successive extrapolations and deferred corrections are described and their implementations are explored thoroughly. A very general deferred correction generator is developed and it is employed in the implementation of a variable order, variable (uniform) step method. Complete FORTRAN programs and extensive numerical experiments and comparisons are included together with a set of 48 references. (Author)

PB-223 904/4GA PC$7.25/MF$1.45
Standford Univ., Calif. Dept. of Computer Science.
THE LZ ALGORITHM TO SOLVE THE GENERALIZED EIGENVALUE PROBLEM.
Technical rept.,
Linda Kaufman. May 73, 103p STAN-CS-73-363
Grant NSF-GJ-29988

Descriptors: (*Matrices(Mathematics), Algorithms), Eigenvalues, Transformations, Iteration, Error analysis, Computer programs, Theorems.
Identifiers: LZ algorithm, Hessenberg matrices.

The LZ algorithm is a method for solving the generalized eigenvalue problem where one is given two square matrices A and B and asked to find the scalar lambda and the vector x such that Ax = lambda Bx. In the paper, the author analyzes certain aspects of the LZ algorithm and discusses various alternative approaches to different parts of the algorithm. In particular, the author performs a backward error analysis of the algorithm and discusses various shift strategies and criteria for convergence. Several direct methods are described which may be substituted for the first phase of the LZ method where A is reduced to upper Hessenberg form and B to upper triangular form. (Author)

PB-224 104/0GA PC$5.25/MF$1.45
Environmental Protection Agency, Cincinnati, Ohio. Office of Water Program Operations.
AN INTRODUCTION TO NORMAL PROBABILITY PAPER.
Training Manual,
Joseph F. Santner. Sep 73, 65p EPA-430/1-73-013

Descriptors: (*Normal density functions, *Curve fitting), Graphic methods, Regression analysis, Data smoothing, Standard deviation.
Identifiers: *Normal probability paper, *Probability paper.

The report contains an introduction to normal probability paper and it provides the following: Brief review of the normal curve; procedure for constructing normal probability paper; the procedure for plotting on the paper when the expected value for order statistic are used; how to draw in the best subjective straight line; estimate mean and standard deviation when the plotted data is normal; and interpretation of plotted data that is not normal.

PB-224 105/7GA PC$3.75/MF$1.45
Environmental Protection Agency, Cincinnati, Ohio. Office of Water Program Operations.
AN INTRODUCTION TO WEIBULL PROBABILITY PAPER.
Training manual (Final),
Joseph F. Santner. Sep 73, 32p EPA-430/1-73-015

Descriptors: (*Probability theory, *Weibull density functions), Graphic methods, Curve fitting, Sampling, Regression analysis.
Identifiers: *Weibull probability paper, *Probability paper.

The paper presents an introduction to Weibull probability paper. The construction of the paper is outline. Correct plotting positions for sample sizes from 2 to 50 are given with a formula for larger samples. If the plotted data is approximated by a straight line, then the distribution is Weibull and graphical estimates for the parameters are obtained.

PB-224 106/5GA PC$4.00/MF$1.45
Environmental Protection Agency, Cincinnati, Ohio. Office of Water Program Operations.
AN INTRODUCTION TO GUMBEL OR EXTREME-VALUE PROBABILITY PAPER.
Final rept.,
Joseph F. Santner. Sep 73, 36p EPA-430/1-73-016

Descriptors: (*Probability theory, Graphic methods), Exponential density functions, Curve fitting, Standard deviation, Sampling.
Identifiers: Gumbel density functions, *Gumbel probability paper, *Probability paper.

The paper presents an introduction to Gumbel probability paper. The construction of the paper outlined. Correct plotting positions for samples sizes from 2 to 50 are given with a formula for larger samples. If the plotted data is approximated by a straight line, then the distribution is Gumbel and graphical estimates for the parameters are obtained.

PB-224 123/0GA PC$3.50/MF$1.45
Environmental Protection Agency, Cincinnati, Ohio. Office of Water Program Operations.
AN INTRODUCTION TO BINOMIAL PROBABILITY PAPER.
Training Manual (Final),
Joseph F. Santner. Sep 73, 28p EPA-430/1-73-014

Descriptors: (*Probability theory, *Binomial density functions), Statistical tests, Significance, Graphic methods, Curve fitting.
Identifiers: *Binomial probability paper, *Probability paper.

The paper gives an introduction to graphical analysis of binomial populations via binomial probability paper. Eleven different types of test of significance are worked out via an example. These include one, two and k sample problems.

SLA-73-479/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
COMPARISON OF ERRORS IN LINEAR DIGITAL MODELS.
S. D. Stearns. Apr 73, 9p CONF-730624-1

Descriptors: (*Mathematical models, *Digital systems), Computers, Errors, Transfer functions.

For abstract, see NSA 28 06, number 15057.

UCID-30059/GA PC$3.75/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
GEARB: SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS HAVING BANDED JACOBIAN.
A. C. Hindmarsh. May 73, 32p
Contract W-7405-eng-48

Descriptors: (*Computer codes, *G codes), (*Differential equations, *Computer calculations), Jacobian function, Matrices, Numerical solution.

For abstract, see NSA 28 06, number 15063.

12B. Operations Research

AD-767 699/2GA PC$2.75/MF$1.45
Naval Postgraduate School Monterey Calif
DELAYS AT A FACILITY WITH DEMAND FROM MANY DISTINCT SOURCES.
Technical rept.,
Donald P. Gaver. Aug 73, 18p Rept no. NPS-55GV73081A

Descriptors: (*Queueing theory, Stochastic processes), (*Data processing systems, Time sharing), Approximation(Mathematics), Integrals, Distribution functions.
Identifiers: Birth and death processes, Markov processes, Normal density functions.

In the paper approximate models are given to describe backlogs of demands at a service system confronted by finitely many users. An application is to a time-shared computer center. Various functionals of the number waiting are discussed using an approximation. (Modified author abstract)

AD-767 700/8GA PC$4.75/MF$1.45
Texas A and M Univ College Station Inst of Statistics
CONFIDENCE REGIONS FOR GLOBAL OPTIMA IN NONLINEAR PROGRAMMING.
Technical rept.,
Ta-Lin Liau, Herman O. Hartley, and Robert L. Sielken, Jr. Aug 73, 162p Rept no. TR-43
Contract N00014-68-A-0140

Descriptors: (*Nonlinear programming, Optimization), (*Confidence limits, Nonlinear programming), Convex sets, Sampling, Distribution functions, Stochastic processes, Mathematical models, Graphics, Tables.
Identifiers: Themis project, Nonconvex programming, Transportation models, Branch and bound method, Integer programming.

The report is concerned with developing new statistical techniques for nonlinear optimization including nonconvex optimization. The approach is a statistical one and provides an upper confidence limit for the global maximum of a mathematical function g(x) of a vector x in a multidimensional 'feasible space', say S. Specifically the report develops the statistical techniques for determining these confidence limits as well as algorithms implementing the techniques and computer programs executing the algorithms. (Modified author abstract)

AD-767 977/2GA PC$3.00/MF$1.45
California Univ Berkeley Operations Research Center
LIMITING DISTRIBUTIONS IN A LINEAR FRACTIONAL FLOW MODEL.
Research rept.,
Richard C. Grinold, and Robert E. Stanford. Sep 73, 27p Rept no. ORC-73-16
Contract N00014-69-A-0200-1055

Descriptors: (*Stochastic processes, Distribution functions), (*Manpower studies, Mathematical models), Convex sets, Matrix algebra, Topology, Vector spaces, Graphics, Theorems.
Identifiers: Markov chains.

The authors examine a linear fractional flow model which can be interpreted as a Markov chain with partially controlled transition probabilities. The paper classifies the set L of limiting distributions and details several of its properties. A precise classification in a three dimensional case is presented. (Author)

AD-767 978/0GA PC$3.00/MF$1.45
California Univ Berkeley Operations Research Center
STABILITY AND CONVERGENCE IN MATHEMATICAL PROGRAMMING.
Research rept.,
Donald M. Topkis, and Michael H. Stern. Sep 73, 40p Rept no. ORC-73-19
Contract N00014-69-A-0200-1010, Grant NSF-GP-30961X1

Descriptors: (*Mathematical programming, Convergence), Stability, Linear programming, Mapping(Transformations), Convex sets, Theorems, Optimization.
Identifiers: Constraints.

The authors consider the point-to-set map (S sub b) = (x / g(x) < or = b), where g(.) is a function from (E sup n) to (E sup m) and b is an m-vector. Previous work by Evans and Gould, Greenberg and Pierskalla, and others has established necessary and sufficient conditions for this map to be upper semi-continuous or lower semi-continuous. Here the authors consider the stronger notion of linear continuity, which requires that changes in (S sub b) as a function of b satisfy a Lipshitz condition. Necessary conditions are presented for which (S sub b) has this property. The authors then consider the class of problems of maximizing a function over (S sub b) and give conditions under which the optimal values of the objective function satisfies a Lipshitz condition in terms of b. Conditions are also given for the sets of epsilon-optimal solutions to be linearly continuous in b. Both convex and nonconvex problems are considered. Some extensions are made to functional perturbations and other areas. (Author)

AD-767 979/8GA PC$3.50/MF$1.35
California Univ Berkeley Operations Research Center
THE CREDIBLE DISTRIBUTION.
Research rept.,
William S. Jewell. Aug 73, 55p Rept no. ORC-73-13
Contracts N00014-69-A-0200-1010, DA-31-124-ARO(D)-331

Descriptors: (*Economics, Probability density functions), Statistical analysis, Mathematical prediction.
Identifiers: *Credibility theory, *Risk, Bayesian analysis, Insurance, Claims.

Credibility theory is concerned with the problem of forecasting the mean performance (claim frequency, total losses, etc.) of an individual risk, selected from a collective of heterogeneous risks, based upon the statistics of the collective, and upon the individual's experience data. The classic results, derived by American actuaries in the 1920's, were further strengthened by Bailey and Mayerson in 1950 and 1965, who showed that these results were exact Bayesian for certain risk distributions. Buhlmann, in 1967, then showed that the credibility formulae were the best least-squares linearized approximation to the exact Bayesian forecast, for general risk distributions. The paper extends credibility theory to the problem of forecasting the distribution of individual risk, based upon collective statistics and individual experience data. (Modified author abstract)

AD-768 016/8GA PC$4.25/MF$1.45
Rand Corp Santa Monica Calif
ON BALANCED GAMES WITHOUT SIDE PAYMENTS,
L. S. Shapley. Sep 72, 41p Rept no. P-4910
Grant NSF-GS-31253
Errata sheet inserted.

Descriptors: (*Game theory, Theorems), Topology, Triangulation, Convex sets, Simplex method, Mathematical programming, Economics.

In the paper the author presents a new proof of a basic theorem of game theory, due to Scarf, which states that every balanced game without side payments has a nonempty core. The main tool is a generalization of Sperner's celebrated topological lemma concerning triangulations of the simplex.

AD-768 106/7GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
A DISCRETE TIME POPULATION CONTROL MODEL WITH SET-UP COST,
David L. Jaquette. Apr 73, 15p Rept no. P-5009

Descriptors: (*Epidemiology, Control systems), (*Pest control, Mathematical models), Dynamic programming, Convex sets, Transfer functions, Theorems.
Identifiers: Control theory, Discrete time systems.

A discrete time stochastic model is often used to describe a natural animal, pest, or epidemic population. Control action, representing harvesting, exterminating, etc., can be taken periodically to reduce the current population level, and so modify the future growth of the population. Dynamic programming can be used to determine optimal control policies for models where growth and control produce economically measurable benefits and/or costs. When controlling action incurs a setup charge plus a cost component linear in the amount of state reduction produced the optimal policy is found to be characterized by a pair ((s sub n),(S sub n)), where reduction is made in period n to state (s sub n) if the native population is found to be above state (S sub n). Analogy with inventory theory is exploited in proving the result. (Author)

AD-768 198/4GA PC$4.00/MF$1.45
Massachusetts Univ Amherst
A NONLINEAR PROGRAMMING APPROACH TO UTILITY MAXIMIZED MENU PLANS.
Technical rept.,
Joseph L. Balintfy, and Prabhakant Sinha. Aug 73, 38p Rept no. TR-9
Contract N00014-67-A-0230-0006

Descriptors: (*Nonlinear programming, Food dispensing), (*Food dispensing, Scheduling), Decision theory, Optimization.
Identifiers: Menus, *Menu planning, Food services management, Preferences.

In the paper the mathematical modeling of food preferences by analytical functions is utilized to formulate the objective function of a menu planning problem as a non-linear additively separable concave function. The linearity of the constraints of the problem permits the use of efficient solution techniques in existence. Such a formulation can yield the number of times each menu item is to be offered in the time horizon of the menu plan, while satisfying the most significant conditions pertaining to population preferences, total cost, nutrition, etc. It is suggested that the actual day to day scheduling of the menu items obtained from this non-linear programming approach can be based on the remaining objective of meal planning-compatibility. Thus in the scheduling phase, one can look at the acceptability of combinations of items. Techniques for doing this are still in the exploratory stages. (Author)

AD-768 281/8GA PC$3.00/MF$1.45
Cornell Univ Ithaca N Y Dept of Operations Research
STOCHASTIC CONTROL OF QUEUEING SYSTEMS.
Technical rept.,
Narahari U. Prabhu. Aug 73, 18p Rept no. TR-192
Contracts DA-31-124-ARO(D)-462, N00014-67-A-0077-0014

Descriptors: (*Queueing theory, Stochastic processes), Control systems, Random variables, Optimization, Theorems.
Identifiers: Stochastic control, Markov processes, Stopping times(Mathematics), Semigroup theory.

Suppose that the state of a queueing system is described by a Markov process ((Y sub t), t > or = 0), and the profit from operating it up to a time t is given by the function f(Y sub t). The author operates the system up to a time T, where the random variable T is a stopping time for the process (Y sub t). Optimal stochastic control is achieved by choosing the stopping time T that maximizes Ef(Y sub T) over a given class of stopping times. In the paper a theory of stochastic control is developed for a single server queue with Poisson arrivals and general serivce times. (Modified author abstract)

13. MECHANICAL, INDUSTRIAL, CIVIL, AND MARINE ENGINEERING

13A. Air Conditioning, Heating, Lighting, and Ventilating

AD-767 797/4GA PC$4.25/MF$1.45
Wyle Labs Huntsville Ala Eastern Operations
VENTILATION SYSTEMS STANDARDS ANALYSIS.
Research rept.
Mar 73, 41p Rept no. MSR-73-6

Contract DOT-CG-12377-A

Descriptors: (*Boats, *Ventilation), Standards, Safety, Cooling + ventilating equipment, Test methods.

The report is divided into three sections, Proposed Federal Standards, Technical Analysis of these Proposed Standards Elements and Compliance Testing Considerations. The Proposed Federal Standards Elements apply to boats having enclosed engine and fuel compartments using a fuel with a flash point of less than 110F. The Technical Analysis discusses the elements and lists the source on which each standard was derived in each section. Compliance Testing Considerations discusses the various methods that could be employed and whether a test is required or a visual inspection would fulfill the test requirement. (Author)

CONF-730904-2/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn. Office of Saline Water, Washington, D. C.
CLEANING DISTILLATION PLANT HEAT TRANSFER TUBING.
S. A. Reed, and L. T. Taylor. 1972, 14p

Descriptors: (*Tubes, *Heat transfer), Corrosion products, Deposits, Desalination, Distillation, Efficiency, Seawater, Surface cleaning.

For abstract, see NSA 28 06, number 12807.

ORNL-TM-4195/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
ACTIVITIES REPORT: BENEFICIAL USES OF WASTE HEAT COVERING ORNL ACTIVITIES THROUGH DECEMBER 31, 1972, IN THE JOINT AEC(ORNL)-TVA PROGRAM.
W. K. Furlong, M. I. Lundin, L. V. Wilson, and M. M. Yarosh. Jun 73, 31p
Contract W-7405-eng-26

Descriptors: (*Buildings, *Air conditioning), (*Waste heat, *Environmental engineering), (*Greenhouses, Air conditioning), Cooling, Evaporation, Heat exchangers, Heat transfer, Heating, Nuclear power plants, Plant growth, Uses, Vaporization heat.

For abstract, see NSA 28 05, number 10903.

PATENT-3 702 395/GA Not available NTIS
Department of the Navy Washington D C
CONDENSER SYSTEM FOR HIGH INTENSITY LIGHT SOURCE.
Patent,
Gottfried R. Rosendahl. Filed 9 Oct 70, patented 7 Nov 72, 5p Rept nos. PAT-APPL-79 416,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Xenon lamps, Mirrors), (*Patents, Xenon lamps), Reflectors, Focusing.
Identifiers: PAT-CL-240-41-3.

The patent describes an elliptical mirror used in combination with a xenon arc projection lamp and a high melting point metal stop to provide in one embodiment an improved vertical axis point light source for point light source projectors, and in another embodiment to provide a condensed, vertical axis beam which is annular in section for panoramic projectors using transparencies having an azimuthal scene recorded in annular form.

WASH-1244/GA PC$10.60/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA. Environmental Systems Dept.
STATE OF THE ART OF SALTWATER COOLING TOWERS FOR STEAM ELECTRIC GENERATING PLANTS.
A. Roffman, and Feb 73, 434p
Contract AT(11-1)-2221

Descriptors: (*Cooling towers, *Design), (*Power plants, Cooling towers), Economics, Performance, Reviews, Seawater.

For abstract, see NSA 28 05, number 10796.

Y-1881/GA PC$4.00/MF$1.45
Oak Ridge Y-12 Plant, Tenn. (Usa).
SIDESTREAM FILTRATION OF COOLING TOWER WATER.
C. R. Schmitt. 29 Jun 73, 23p
Contract W-7405-eng-26

Descriptors: (*Cooling towers, Water), (*Water, *Filtration), (*Filters, *Performance), Sand.

For abstract, see NSA 28 05, number 10797.

13B. Civil Engineering

AD-768 012/7GA PC$3.25/MF$1.45
New York City-Rand Inst N Y
ANALYSIS AND URBAN GOVERNMENT: EXPERIENCE OF THE NEW YORK-RAND INSTITUTE-II,
Bernard R. Gifford. Apr 72, 22p Rept no. P-4822
Presented at the Science and the New Challenge to Rationality of the American Association for the Advancement of Science's Annual Meeting (139th), Washington, D.C., 29 Dec 72.

Descriptors: (*Urban areas, *Problem solving), (*Management planning, *New York), Economics, Sociometrics, Population, Education, Law, Federal budgets, Fire safety, Housing, Ecology, Transfer of training, Organizations.
Identifiers: Local government, New York City(New York), Violence, Law enforcement, Socioeconomic status, Ethnic groups.

The paper is a slightly expanded version of a talk describing the origins of The New York City-Rand Institute, some of its accomplishments, its style of operation, the political economy of policy analysis in New York City and some lessons learned. The talk was presented at a special session of the American Association for the Advancement of Science's 139th Annual Meeting held in Washington, D. C. 1972.

AD-768 015/0GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
PREDICTING CHANGES IN URBAN FORM FROM TRANSPORTATION SYSTEM CHANGES: A PROPOSED METHODOLOGY,
J. H. Enns, B. K. Burright, P. G. De Leon, and B. F. Goeller. Jan 73, 29p* Rept no. P-4960

Descriptors: (*Transportation, *Urban planning), Land use, Mathematical models, Regression analysis.

The plan of the document is as follows: Section II discusses two dimensions of urban form. Specific policy questions are identified and a brief sketch of how this research will provide predictive tools to deal more effectively with these questions is presented. Section III describes in more detail the approach used to relate changes in transportation system characteristics to changes in urban form. Section IV presents several potential applications of the approach. The Appendix describes some of the available data sources.

AD-768 115/8GA PC$6.25/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
SELECTION OF AIR POLLUTION CONTROL EQUIPMENT,
Bruce G. Stout. Jul 71, 81p Rept no. USAMC-ITC-2-71-12

Descriptors: (*Air pollution, Control), Optimization, Costs, Data, Computer programs, Mathematical models, Selection.
Identifiers: Air pollution control equipment, Data processing, Computerized simulation.

This project is intended to serve three purposes. First, it is to act as a survey of air pollution control equipment manufacturers while also providing a questionnaire used in evaluating their equipment. Second, it presents a computerized cost model used to select the optimum piece of air pollution control equipment for a given situation. Third, it is hoped that this procedure will allow users of air pollution control equipment in Army Materiel Command production facilities to choose the best device quickly and efficiently. Some brief background on air pollution and its control is first discussed and is followed by a survey of current equipment selection methods. The development of the annual cost equation, which is the basis of selection in this project, is illustrated for a generalized pollution control system. The data needed for the model along with a computer program for its manipulation are then presented. Finally, advantages and disadvantages of this selection procedure are mentioned and recommendations for future research in the field of pollution control noted. (Author)

AD-768 120/8GA PC$3.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
THE EFFECT OF EMISSIONS CONTROL REGULATIONS UPON INTERNAL COMBUSTION ENGINE MAINTENANCE,
John D. Binford. Jun 73, 35p* Rept no. USAMC-ITC-1-73-02

Descriptors: (*Exhaust gases, Motor vehicle), (*Internal combustion engines, *Maintenance), California, Law, Costs.
Identifiers: Air pollution abatement, Automobile exhausts, Regulations, Automobile engines, Legislation, *Air pollution control.

A comprehensive history of emissions regulation and discussion of their effect upon the maintenance of internal combustion engines is presented. The further constraint of emissions regulations by statute is placing an increasing burden upon the engine designer: various solutions are examined and evaluated. (Modified author abstract)

AD-768 177/8GA PC$4.50/MF$1.45
Army Engineer Waterways Experiment Station Vicksburg Miss
LABORATORY TESTS OF CONCRETE CORES FROM THE NEW SECOND LOCK SAULT STE. MARIE, MICHIGAN.
Final rept.,
Alan D. Buck, Katharine Mather, and Charles R. Hallford. Aug 73, 48p Rept no. AEWES-Misc-Paper-C-73-8

Descriptors: (*Dams, Damage assessment), (*Concrete, Mechanical properties), Sampling, Degradation, Environmental tests.
Identifiers: Locks(Waterways), St. Lawrence Seaway.

Two groups of concrete cores from the walls and floor of the New Second Lock at Sault Ste. Marie, Michigan, were tested in the laboratory with the intent of answering the following questions: (a) Does the concrete show any sign of physical damage of the type that occurred in the culverts at Eisenhower Lock on the St. Lawrence seaway. (b) Was the air-void system of the concrete wholly or partially filled during 17 months of submergence in the lock chamber. Two groups of cores were drilled from concrete placed in the summer and fall of 1966 and the spring of 1967. The first group was drilled in 1968 and shipped dry and the second in 1969-1970 under water and shipped packed to maintain field moisture content. Selected specimens from each group were tested for air content, compressive strength, resistance to accelerated laboratory freezing and thawing, and permeability. Some petrographic observations were tested and included. (Modified author abstract)

AD-768 243/8GA PC$3.00/MF$1.45
Rand Corp Washington D C
POLICY ANALYSIS AND URBAN SERVICES: ASSESSING THE IMPACT,
Robert K. Yin. May 73, 11p Rept no. P5014
Presented at the Symposium on Urban Growth and Development, sponsored by the Washington Operations Research Council AND THE Urban Institute, held in Washington, D. C., on 16-17 Apr 73.

Descriptors: (*Urban planning, *Systems engineering), Reviews, Management planning, Research program administration, Organizations, Analysis.
Identifiers: Policies, Services, Equipment.

Three papers present a variety of experiences in applying research and analysis to urban service delivery systems.

AD-768 244/6GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
PROBLEMS IN URBAN MODELING: A REVIEW OF THE POLITICIAN, THE BUREAUCRAT, AND THE CONSULTANT,
Peter deLeon. May 73, 11p Rept no. P-5019

Descriptors: (*Urban planning, Mathematical models), (*Reviews, Urban planning), Documentation, Simulation, Programming(Computers), Problem solving.
Identifiers: *Book reviews, Computerized simulation.

The subject book is reviewed for academics, students, and persons concerned with the complexities of urban problems; model and simulation builders; and those interested in the more abstract questions of natural ordering.

BNL-50355/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
ENERGY, ENVIRONMENT AND PLANNING: THE LONG ISLAND SOUND REGION. PROCEEDINGS OF A CONFERENCE HELD AT BROOKHAVEN NATIONAL LABORATORY, OCTOBER 5--7, 1971.
M. D. Goldberg. 12 Oct 72, 177p CONF-711077-
Contract AT(30-1)-16

Descriptors: (*Energy, *Meetings), (*Environment, Meetings), (*New york, Energy), (*New jersey, Energy), Air, Connecticut, Ecology, Economics, Electric power, Fossil fuels, Human populations, Industry, Legal aspects, Nuclear fuels, Planning, Regional analysis, Site selection, Synthetic fuels, Usa, Water.

For abstract, see NSA 28 05, number 12472.

BNWL-SA-4666/GA PC$3.50/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
WATER REUSE IN POWER PRODUCTION. AN OVERVIEW.
R. T. Jaske. 25 Apr 73, 29p CONF-730433-2

Descriptors: (*Water, Electric power), (*Electric power, *Production), Correlations, Economics, Energy consumption, Energy conversion, Environment, Human populations, Usa, Water pollution.

For abstract, see NSA 28 04, number 10475.

COM-73-11567/7GA PC$4.50/MF$1.45
California Univ., San Diego, La Jolla. Inst. of Marine Resources.
COASTAL ZONE BIBLIOGRAPHY: CITATIONS TO DOCUMENTS ON PLANNING, RESOURCES MANAGEMENT AND IMPACT ASSESSMENT. FIRST EDITION,
Jens Sorensen, and Marie Demers. Aug 73, 133p*
IMR-TR-43, Sea Grant Pub-8 NOAA-73090507
Contract NOAA-2-35208

Descriptors: (*Coasts, *Land development), (*Bibliographies, Land development), (*Regional planning, Coasts), Environmental surveys, Socioeconomic status, Management planning, Land use.
Identifiers: *Coastal zone development, Sea Grant Program.

The computer automated bibliography presented was developed as a support program to the authors' Sea Grant research project. The general objective of our project is to develop methods to assess the environmental and socioeconomic impacts of coastal development and resource use. The primary impact assessment method being developed is the construction of networks and checklists to systematically identify the potential environmental and socioeconomic impacts that may be generated by a proposed coastal development or resource use. The bibliography is intended to provide documentation of actual occurrence and research reports on each of the potential impacts identified by the networks and checklists.

COM-73-11582/6GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
DISPOSAL AND UTILIZATION OF WASTES FROM ENERGY PRODUCTION. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1970-May 73,
Edward J. Lehmann. Aug 73, 84p* NTIS-WIN-73-039
Supersedes NTIS-PK-127.

Descriptors: (*Electric power plants, *Pollution), (*Bibliographies, Electric power plants), (*Air pollution, Electric power plants), (*Water pollution, Electric power plants), Nuclear power plants, Thermal power plants, Solid waste disposal, Abatement.
Identifiers: *Thermal pollution, Air pollution control, Water pollution control.

The NTISearch bibliography contains 78 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The bibliography presents generalized studies concerning environmental factors of both thermal and nuclear power plants. These studies cover the abatement and control techniques for water pollution, air pollution, and solid waste. Not included are overly specific studies, biological effects, or studies not applicable to more than one plant. (Author)

COM-73-11613/9GA PC$2.75/MF$1.45
California Univ., Santa Barbara. Marine Science Inst.
REPORT ON THE COMPOSITION OF OIL FROM THE REGION OF NEW HYDROCARBON UPWELLING IN THE SANTA BARBARA CHANNEL,
Paul G. Mikolaj. Aug 73, 23p NOAA-73092102
Grant NOAA-043-158-22

Descriptors: (*Santa Barbara Channel, Water pollution), (*Hydrocarbons, Chemical analysis), Oils, Gas chromatography, Spectrophotometry, Nickel, Vanadium, Alkanes, California, Seepage, Upwelling.
Identifiers: Sea Grant program, Oil pollution, Oil seeps.

Analysis by gas chromatography, and measurement of trace concentrations of nickel and vanadium by atomic absorption spectrophotometry were performed on oil from the area of new hydrocarbon upwelling in the Santa Barbara Channel. Results of these determinations were then compared to similar analyses made on oil from previously existing natural seeps near Coal Oil Point, and from produced oils originating in the Sisquoc, Monterey, Rincon, and Vaqueros formations of the Santa Barbara Channel. The major findings from these comparative analyses are summarized: oil from the new area of hydrocarbon upwelling is significantly different from oil originating at the nearshore natural seeps in the vicinity of Coal Oil Point; the new seep oil contains approximately one-half the concentration of nickel and vanadium; oil from the new seep contains significant amounts of normal paraffins out to carbon number 30 and beyond; and the site of the new hydrocarbon upwelling is located in the middle of an area where, during the period 1946 to 1947, previous oil and gas seeps of natural origin have been reported.

COM-73-11672/5GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
COMBINED SEWERS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Edward J. Lehmann. Oct 73, 85p* NTIS-WIN-73-044
Supersedes NTIS-PK-39.

Descriptors: (*Combined sewers, *Bibliographies), Overflows, Water pollution, Surface water runoff, Urban planning, Storm sewers, Flow control, Automatic control.
Identifiers: Water pollution control.

The NTISearch bibliography contains 80 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The reports included for this bibliography cover the treatment of combined sewer overflows, flow control, and system design and automation. (Author)

COM-73-11673/3GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
AIR POLLUTION EFFECTS ON MATERIALS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Elizabeth A. Harrison. Oct 73, 55p* NTIS-WIN-73-045
Supersedes NTIS-PK-21.

Descriptors: (*Air pollution, *Atmospheric corrosion), (*Bibliographies, Atmospheric corrosion), Degradation, Staining.
Identifiers: *Air pollution effects(Materials), Soiling index.

The NTISearch bibliography contains 50 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts include all of the major government studies on material damage caused by air pollution. (Author)

COM-73-11677/4GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
AUTOMATIC ACQUISITION OF WATER QUALITY DATA. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1970-May 73,
Edward J. Lehmann. Aug 73, 56p* NTIS-WIN-73-049
Supersedes NTIS-PK-121.

Descriptors: (*Water quality, *Data acquisition), (*Water pollution, Data acquisition), (*Bibliographies, Water quality), Management planning, Monitors, Sampling, Information systems.
Identifiers: Water pollution sampling, Water quality data, Management information systems.

The NTISearch bibliography contains 51 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts include the techniques and equipment used to obtain continuous water quality data. General system management and planning studies are covered. (Author)

COM-73-11694/9GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
AIR QUALITY MONITORING. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1970-May 73,
Edward J. Lehmann. Aug 73, 78p* NTIS-WIN-73-053
Supersedes NTIS-PK-124.

Descriptors: (*Air pollution, *Monitors), (*Bibliographies, Air pollution), Gas analysis, Gas detectors, Remote sensing, Particles, Sulfur dioxide, Samplers, Nitrogen oxides, Hydrocarbons.
Identifiers: *Air pollution sampling, *Air pollution detection, Laser spectroscopy.

The NTISearch bibliography contains 73 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The subject matter included covers any type of insrument or technique for continuous air pollution sampling. Analyzer design and operation are presented including information on remote sensors. (Author)

COM-73-11695/6GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
EFFECTS OF LAND USE AND URBANIZATION ON WATER RESOURCES. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1971-Sep 73,
Edward J. Lehmann. Oct 73, 84p* NTIS-WIN-73-054
Supersedes NTIS-PK-129.

Descriptors: (*Land development, *Water resources), (*Urbanization, Water resources), (*Land use, Water resources), Regional planning, Urban planning, Benefit cost analysis, Surface water runoff, Recreation, Water supply, Water quality, Flood control, Water pollution.

The NTISearch bibliography contains 79 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. Presented are general studies on the effects of land use and urbanization on water resources and water quality. Also included are planning studies to aid in water resource development. Reports on specific locals are included if they would be of interest to other areas. (Author)

COM-73-11707/9GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
AERATION SYSTEMS AND PROCESSES. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1956-Sep 73,
Edward J. Lehmann. Oct 73, 109p* NTIS-WIN-73-057
Supersedes NTIS-PK-29.

Descriptors: (*Bibliographies, *Aeration), (*Lagoons(Ponds), Bibliographies), (*Reservoirs, Aeration), (*Sewage treatment, Lagoons(Ponds)), Water quality, Industrial waste treatment, Aerobic processes, Performance evaluation, Design, Dissolved gases, Stream pollution, Oxygen, Lakes, Limnology.
Identifiers: *Aeration ponds, Destratification, *Reaeration.

The NTISearch bibliography contains 101 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts are divided into two sections. The first covers aeration lagoons used in sewage treatment (72 abstracts); whereas, the second covers mechanical aeration of streams and reservoirs to improve water quality (29 abstracts). (Author)

COM-73-11708/7GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
FOOD PROCESSING WASTE TREATMENT. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Edward J. Lehmann. Oct 73, 91p* NTIS-WIN-73-058
Supersedes NTIS-PK-28.

Descriptors: (*Food processing, *Industrial waste treatment), (*Bibliographies, Industrial waste treatment), Water pollution, Air pollution.
Identifiers: *Water pollution control.

The NTISearch bibliography contains 86 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts primarily cover water pollution control methods for all types of food processes although some air pollution studies are included. (Author)

COM-73-11711/1GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
COLD WEATHER CONSTRUCTION. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1960-Sep 73,
Mary Young. Oct 73, 104p* NTIS-WIN-73-061
Supersedes NTIS-PK-77.

Descriptors: (*Cold weather construction, *Bibliographies), Permafrost, Roads, Concrete construction, Arctic regions, Alaska, Winter, Thermal insulation, Soil mechanics, Tundra, Earthwork, Civil engineering, Pipelines, Buildings.

The NTISearch bibliography contains 99 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts included study materials, road construction, foundations, earthworking, permafrost problems, and other topics of interest in cold weather and subarctic constructions. (Author)

COM-73-11712/9GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
SEPTIC TANKS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1949-Sep 73,
Elizabeth A. Harrison. Oct 73, 61p* NTIS-WIN-73-062

Descriptors: (*Septic tanks, *Bibliographies), (*Sewage treatment, Septic tanks), Soil properties, Water pollution, Planning, Design, Ground water.

The NTISearch bibliography contains 56 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts include soil studies, water pollution, planning, and design of septic systems. (Author)

CONF-730514-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn. Cone Mills Corp., Greensboro, N.C. (Usa).
STUDY OF GAMMA-INDUCED, LOW-TEMPERATURE OXIDATION OF TEXTILE EFFLUENTS.
E. E. Ketchen, F. N. Case, and T. A. Alspaugh.
19p

Descriptors: (*Dyes, *Chemical radiation effects), Charcoal, Color, Gamma radiation, Liquid wastes, Oxidation, Oxygen, Pressure dependence, Production, Radiation chemistry, Radiation doses, Textiles, Waste processing.

For abstract, see NSA 28 04, number 07931.

CONF-730807-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
TRACE ELEMENT MASS BALANCE AROUND A COAL-FIRED STEAM PLANT.
N. E. Bolton, J. A. Carter, J. F. Emery, C. Feldman, and W. Fulkerson. 1973, 10p
Contract W-7405-eng-26

Descriptors: (*Coal, *Impurities), (*Fossil fuels, *Power plants), Antimony, Arsenic, Beryllium, Cadmium, Chromium, Electricity, Environment, Lead, Mercury, Nickel, Selenium, Trace amounts, Vanadium, Zinc.

For abstract, see NSA 28 06, number 15018.

EIS-AA-73-1636-F/GA PC$37.25/MF$1.45
Forest Service, Washington, D.C.
SELECTION OF NEW STUDY AREAS FROM ROADLESS AND UNDEVELOPED AREAS WITHIN NATIONAL FORESTS.
Final environmental impact statement.
15 Oct 73, 701p USDA-FS-FES(Adm)-73-42 ELR-73-1636
Supersedes report No. EIS-AA-73-0087-D.

Descriptors: (*Environmental impact statements, *National parks), (*Regulations, Forest land), Legislation, Management, Wildlife, Natural resources, Rocky Mountain Region, Pacific Coast Region, Alaska, North Carolina, Florida.

The project proposes the selection of 274 new study areas from an inventory of 1449 areas of undeveloped National Forest lands, such areas to be further evaluated as to the desirability of adding them to the National Wilderness Preservation System. All but three of the areas, containing about 12.3 million acres, are located in the 11 westernmost States of the contiguous United States, plus Alaska. Florida and North Carolina contain one area each. The remaining area is located in Puerto Rico. Since the new study areas will be held in essentially their present condition until studies are completed and a determination is reached as to their classification for wilderness or other purposes, the direct environmental impacts will be few. Occasional adverse environmental impacts will occur, including vegetation or wildlife losses and increased erosion that would be avoidable without the restrictions.

EIS-AA-73-1677-D/GA PC$3.75
Coast Guard, Washington, D.C.
COAST GUARD ICEBREAKING ACTIVITY ON THE GREAT LAKES.
Draft environmental impact statement.
23 Oct 73, 31p ELR-73-1677

Descriptors: (*Environmental impact statements, *Ice breakup), (*Great Lakes, Environmental impact statements), Ice navigation, Ice prevention, Recreation, Harbor facilities, Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin.

A proposal is described for Coast Guard icebreakers to keep navigable waters on the Great Lakes open to commerce during the winter months in order to minimize seasonal effects on commerce, industry and other modes of transportation; to conduct Search and Rescue missions; and to assist other agencies in the prevention of flooding caused by ice accumulation. The following States will be affected: Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin. Measures to keep navigable waters open in winter may have adverse environmental effects on shoreline and harbor areas. It may also have an adverse effect on the local life style of islanders and winter sportsmen.

EIS-AK-73-1647-D/GA PC$3.25
Federal Aviation Administration, Washington, D.C. Airports Service.
CONSTRUCTION OF AIRPORT IMPROVEMENTS AT TELLER, ALASKA.
Draft environmental impact statement.
16 Oct 73, 21p ELR-73-1647

Descriptors: (*Environmental impact statements, *Airports), (*Alaska, Environmental impact statements), Construction, Rural areas, Aprons, Taxiways, Access roads.

Identifiers: Teller(Alaska).

The location of the proposed airport will be on a prominent east-west ridge about 1.5 miles southeast of Teller. The village of Teller is approximately 60 miles northwest of Nome and is situated on the sea coast between Port Clarence and Grantley Harbor. The population of Teller in 1970 was 220 people. The project will involve the construction of airport improvements, consisting of a new airstrip, a parking apron, a connecting taxiway, an access road, and a snow removal equipment storage building. Area of surface disturbance in airport construction is 17 acres. Total area of airport lease is 403 acres. The area which the airport will cover is presently used for little other than occasional reindeer grazing and contains typical mosses, grasses, and low shrubs typical of the tundra. The vegetation will, of course, be destroyed under the structures themselves. No significant adverse effects, either primary or secondary, are anticipated.

EIS-AK-73-1648-D/GA PC$3.00
Federal Aviation Administration, Washington, D.C. Airports Service.
CONSTRUCT LANDING STRIP IMPROVEMENTS AT CHIGNIK, ALASKA.
Draft environmental impact statement.
16 Oct 73, 14p ELR-73-1648

Descriptors: (*Environmental impact statements, *Airports), (*Alaska, Environmental impact statements), Construction, Runways, Aprons, Taxiways, Access roads, Buildings.
Identifiers: Chignik(Alaska).

It is proposed to construct landing strip improvements at Chignik, Alaska. Construction includes runway, parking apron, connecting taxiway, access road, and equipment building. Acceptable environmental impact is expected.

EIS-AK-73-1671-F/GA PC$12.50/MF$1.45
Federal Highway Administration, Juneau, Alaska. Alaska Div.
GASTINEAU CHANNEL CROSSING INCLUDING DOUGLAS HIGHWAY BETWEEN LAWSON AND KOWEE CREEKS.
Addendum to Final environmental impact statement.
18 Oct 73, 208p FHWA-AK-EIS-72-01-F ELR-73-1671
Supersedes report No. PB-205 955-D. Prepared by Alaska State Dept. of Highways.

Descriptors: (*Environmental impact statements, *Highway bridges), (*Alaska, Environmental impact statements), Construction, Highways, Traffic safety, Relocation, Houses, Trailers.
Identifiers: Gastineau Channel crossing, Alaska highway 95, Juneau(Alaska).

The proposed project is located in Juneau, AK. It consists of a new bridge structure, on FAP 95 across Gastineau Channel and the reconstruction of about 1 1/4 miles of a contiguous section of the Douglas Highway. The Douglas Highway section has been included in this study as the extent of the necessary improvements to it will depend upon the location of the new bridge crossing. The selected crossing corridor is Alternate E, a location as close as possible to the existing bridge with the Juneau approach tying into the same intersection. The Douglas Highway section will have two driving lanes, eight-foot paved shoulders and a pedestrian walkway. The principal positive impact of the proposed crossing will be to make access across Gastineau Channel more convenient and safer. Detrimental impacts are limited to the displacement of about 30 families.

EIS-AL-73-1601-F/GA PC$4.50/MF$1.45
Army Engineer District, Moblie, Ala.
JOHN HOLLIS BANKHEAD LOCK AND DAM, WARRIOR RIVER BASIN, ALABAMA.
Final environmental impact statement.
10 Oct 73, 47p ELR-73-1601
Supersedes report No. EIS-AL-72-5443-D.

Descriptors: (*Environmental impact statements, *Locks(Waterways)), (*Alabama, Environmental impact statements), Construction, Navigation, Water quality, Recreational facilities, Esthetics, Benthos, Warrier River Basin, Land use.
Identifiers: John Hollis Bankhead Lock and Dam.

The project proposes continuation of construction of a replacement lock at John Hollis Bankhead Lock and Dam, Alabama. The project is being constructed to improve navigation. Construction of the $46,300,000 project was initiated on 10 April 1970 and was 33% complete on 28 February 1973. Environmental impacts include disposal of 5.5 million cubic yards of earth and rock; degradation of water quality and aesthetics during construction; loss of flora and fauna due to blasting; providing improved navigational facilities, increased and more varied recreational opportunities, and improved aesthetics once the project is completed. Adverse effects include loss of 189 acres of land which could be used for timber production, mineral production, human habitation or wildlife habitat; damage to flora and fauna in Lake Bankhead from blasting; degradation of water quality and aesthetics during construction; and temporary curtailment of public recreational activities during construction.

EIS-AL-73-1657-D/GA PC$3.00
Federal Highway Administration, Montgomery, Ala. Alabama Div.
LOCATION APPROVAL PROJECTS S-1711-A, AND FAS-5129 FROM ALABAMA STATE ROUTE 110 TO EXISTING AUBURN UNIVERSITY (EXTENSION IN MONTGOMERY) ROAD NORTH OF INTERSTATE 85 INCLUDING INTERCHANGE WITH I-85, MONTGOMERY COUNTY, ALABAMA.
Draft environmental impact statement.
17 Oct 73, 17p FHWA-AL-EIS-73-10-D ELR-73-1657
Prepared by Alabama State Highway Dept.

Descriptors: (*Environmental impact statements, *Highways), (*Alabama, Environmental impact statements), Right of way acquisition, Rural areas, Traffic engineering.
Identifiers: Alabama route 110, Montgomery County(Alabama).

The statement concerns location approval for a two lane highway beginning on Alabama State Route 110 approximately 2.5 miles east of the Montgomery east by-pass; thence from this beginning point in a northerly direction crossing Interstate 85 and tying into present two lane road bordering the University of Auburn Campus, Montgomery Extension. It is proposed to construct an Interchange where I-85 is crossed. Total length of the project is approximately 2.2 miles. The area traversed by the project is all rural flat pasture land with no residential development. Acquisition of approximately 60 acres (including Interchange) of pasture land will be necessary. Implementation of the proposed project would provide access to the new Auburn University Extension in Montgomery from Alabama State Route 110 and I-85. In addition, the project is included in the Montgomery Area Transportation Plan.

EIS-AL-73-1659-D/GA PC$5.00
Federal Aviation Administration, Washington, D.C. Airports Service.
GADSDEN MUNICIPAL AIRPORT, GADSDEN, ALABAMA.
Draft environmental impact statement.
17 Oct 73, 59p ELR-73-1659
Prepared by Wainwright Engineering Co., Dothan, Ala.

Descriptors: (*Environmental impact statements, *Airports), (*Alabama, Environmental impact statements), Land acquisition, Construction, Improvement, Runways, Aviation lighting, Taxiways, Aprons, Buildings.
Identifiers: Gadsden(Alabama).

The city of Gadsden, AL, proposes airport development to acquire 398 acres of land; lengthen an existing runway; install high intensity runway lighting; extend and light a parallel taxiway; widen the existing taxiway; strengthen the existing apron; install visual approach slope indicator and runway end identifier lights; install perimeter fencing; and construct a fire/crash equipment building. No significant adverse effects are expected.

EIS-AL-73-1668-D/GA PC$17.25
Federal Power Commission, Washington, D.C. Bureau of Power.
CROOKED CREEK PROJECT NO. 2628, ALABAMA.
Draft environmental impact statement.
18 Oct 73, 305p FPC-PWR-2628 ELR-73-1668
Supersedes report No. EIS-AL-72-5716-D.

Descriptors: (*Environmental impact statements, *Multiple purpose reservoirs), (*Alabama, Environmental impact statements), Electric power plants, Flood control, Recreation, Land use, Farms, Wildlife, Relocation, Water quality.
Identifiers: Crooked Creek project, Randolph County(Alabama), Clay County(Alabama).

The proposal consists of consideration of an application by Alabama Power Company for major license for construction and operation of the Crooked Creek Project, No. 2628, a hydroelectric generating plant to be located on the Tallapoosa River in Randolph and Clay Counties, Alabama. The project will consist of a concrete dam 150 feet high and 956 feet long, earth and rock-filled dikes located on both abutments aggregating a length of about 4500 feet, and a powerhouse containing two generating units. A 24-mile long reservoir with a shoreline of about 270 miles and an area of about 10,660 acres at elevation 793 will permit storage for power generation, flood control, and recreational use. Initial recreation facilities will include four developed public access areas, a public fishing facility in the tailrace area and an overlook for visitors. Environmental impacts due to construction and operation of the project are discussed.

EIS-AZ-73-1597-F/GA PC$9.75/MF$1.45
Forest Service, Albuquerque, N. Mex. Southwestern Region.
A PROPOSAL FOR VEGETATION CONTROL BY MECHANICAL TREATMENT IN THE STATE OF ARIZONA.
Final environmental impact statement.
10 Oct 73, 152p USDA-FS-FES(Adm)-73-67 ELR-73-1597
Supersedes report no. EIS-AZ-73-0894-D.

Descriptors: (*Environmental impact statements, *Weed control), (*Arizona, Environmental impact statements), Vegetation, Control, Water quality, Wildlife, Forage crops, Soils, Fires, Harvesting.

The project proposes use of mechanical equipment and fire in Yavapai, Cochise, Coconino, Navajo, and Apache Counties for the control of invading mesquite, pinyon-juniper, and chaparral. There should be several beneficial impacts including improved water quality and wildlife habitat; decreased soil erosion; increased forage, soil productivity, and recreational opportunities. Careful selection of site and equipment along with proper timing should minimize temporary adverse environmental effects on soil, water, and air.

EIS-AZ-73-1630-F/GA PC$9.50/MF$1.45
Federal Highway Administration, Phoenix, Ariz. Arizona Div.
FLAGSTAFF-LAKE MARY ROAD SECTION, JCT. U.S. 66-JCT. FAS 209, IN COCONINO COUNTY ARIZONA.
Final environmental impact statement.
12 Oct 73, 146p FHWA-AZ-EIS-72-04-F ELR-73-1630
Supersedes report No. EIS-AZ-72-5164-D. Prepared by Arizona State Highway Dept.

Descriptors: (*Environmental impact statements, *Highways), (*Arizona, Environmental impact statements), Construction, Urban areas, Rural areas, Right of way acquisition, Highway bridges, Overpasses, Economic development, Traffic engineering, Access roads, Wildlife.
Identifiers: Coconino County(Arizona).

The highway construction project is located in the city of Flagstaff. It is divided into a rural section and an urban section. Construction of this state highway will benefit both the business and private sectors of the Flagstaff community. Adverse environmental impacts include a reduction of forest areas, considered to be one of Flagstaff's aesthetic values, plus a reduction of wildlife habitat.

EIS-AZ-73-1643-F/GA PC$7.50/MF$1.45
Bureau of Sport Fisheries and Wildlife, Washington, D.C.
PROPOSED HABITAT ENHANCEMENT PROJECT TOPCOCK MARSH UNIT, HAVASU NATIONAL WILDLIFE REFUGE, MOHAVE COUNTY, ARIZONA.
Final environmental impact statement.
15 Oct 73, 110 ELR-73-1643, FES-73-59
Supersedes report No. EIS-AZ-73-0586-D.

Descriptors: (*Environmental impact statements, *Channel improvements), (*Arizona, Environmental impact statements), Dikes, Wildlife, Swamps, Levees, Turbidity, Water quality.
Identifiers: Havasu National Wildlife Refuge, Mohave County(Arizona).

The report describes a proposal for a habitat enhancement project within the Topock Marsh Unit of Havasu National Wildlife Refuge, Mohave County, Arizona. Topock Marsh is located about four miles southeast of the community of Needles, California. The proposed project would include: (a) diking to permit water management, (b) channeling to improve water circulation, (c) levees and management units to provide habitat for the endangered Yuma clapper rail, (d) construction of a sediment basin to trap silt from the marsh inlet canal, and (e) diking to isolate water from Fort Mohave Indian land. A summary of environmental impact and adverse environmental effects is given.

EIS-CA-73-1591-F/GA PC$12.75/MF$1.45
Federal Highway Administration, Sacramento, Calif. California Div.
FREEWAY DEVELOPMENT OF STATE HIGHWAY ROUTE 29 AND 121 IN NAPA COUNTY, CALIFORNIA, 4.8 MILES.
Final environmental impact statement.
4 Oct 73, 215p FHWA-CA-EIS-1972-07-F ELR-73-1591
Prepared by State of California Dept. of Public Works. Supersedes report No. EIS- CA-72-5710-D.

Descriptors: (*Environmental impact statements, *Highways), (*California, Environmental impact statements), Construction, Freeways, Rural areas, Highway bridges, Napa River, Traffic engineering.
Identifiers: California route 29, California route 121, Napa County(California).

The proposed highway improvement consists of a freeway on Routes 29 and 121 between existing Route 29 near Soscol Road and Imola Avenue West, a distance of 4.8 miles, near the City of Napa, Napa County, State of California. The project will primarily provide a beneficial effect on the State, region, and community traffic facilities in the Napa area. There will be a reduction in congestion for through traffic and improved circulation for local traffic. Archaeological sites are located within the project area. They will be explored and if necessary, salvaged prior to highway construction. Construction within the Napa River will not be necessary in order to build a high level bridge. Precautions will be taken to prevent an adverse effect on water quality. Wildlife in the area will be adversely effected by a loss of substantial acres of grassland habitat. Mitigation measures will consist of planting trees and shrubs to provide wildlife with food and cover within open areas in the right of way.

EIS-CA-73-1596-D/GA PC$3.50
Army Engineer District, San Francisco, Calif.
OAKLAND OUTER HARBOR, MAINTENANCE DREDGING, ALAMEDA COUNTY, CALIFORNIA.
Draft environmental impact statement.
5 Oct 73, 30p ELR-73-1596

Descriptors: (*Environmental impact statements, *Channel improvements), (*California, Environmental impact statements), Harbors, Dredging, Benthos, Spoil, Water pollution, Navigation.
Identifiers: Alameda County(California).

Maintenance dredging of the 35 feet deep Oakland Outer Harbor Channel and Turning Basin is proposed. Dredging material will be deposited in the ocean beyond the 100-fathom isobath. Dredging of 250,000 cubic yards of material will return the channel and turning basin to its authorized depth. Shipping and terminal activities will be allowed to continue without increased chance of vessel damage by collision or grounding. The dredging will disrupt some benthic fauna; create some turbidity; and temporarily decrease water quality during both dredging and spoiling.

EIS-CA-73-1617-D/GA PC$8.00
Army Engineer District, Los Angeles, Calif.
CALLEGUAS CREEK SIMI VALLEY TO MOORPARK, VENTURA COUNTY, CALIFORNIA.
Draft environmental impact statement.
11 Oct 73, 116p ELR-73-1617

Descriptors: (*Environmental impact statements, *Channel improvements), (*California, Environmental impact statements), Flood control, Recreational facilities, Wildlife, Land use, Esthetics.
Identifiers: Ventura County (California).

It is proposed to adopt a program incorporating (a) 4.4-mile concrete-lined rectangular flood control channel in Simi Valley, together with 106 acres of park and trail development, including hiking and riding trails, picnic and play area, a continuous linear park extending the full length of the channel, and rest staging area; (b) flood plain management in the area between Simi Valley and Moorpark to prohibit development which could be significantly affected by standard project flood flows and recreational trail development for continuation of the riding and hiking trails proposed for Simi Valley and Moorpark; and (c) a 1.6-mile concrete-lined rectangular flood control channel and a 2.8-mile earth-bottom trapezoidal flood control channel, together with 148 acres of park and trail development, including hiking and riding trails, within the flood control rights-of-way, rest and staging areas, and picnic and play areas. Environmental impacts and Adverse environmental effects are discussed.

EIS-CA-73-1673-F/GA PC$4.75/MF$1.45
Bureau of Reclamation, Sacramento, Calif. Mid-Pacific Regional Office.
YOLO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT (PL 84-984), YOLO COUNTY, CALIFORNIA.
Supplement to Final environmental impact statement.
23 Oct 73, 51p ELR-73-1673, FES-73-61
See also PB-202 184-F.

Descriptors: (*Environmental impact statements, *Multiple purpose reservoirs), (*California, Environmental impact statements), Flood control, Water storage, Clear Lake.
Identifiers: Indian Valley Dam, Yolo County(California), Lake County(California).

The supplement to the final environmental statement for the Indian Valley Project of the Yolo County Flood Control and Water Conservation District addresses the question of whether or not the operation of the Indian Valley Project will adversely affect the water surface levels of Clear Lake in Lake County, California. The supplement concludes that the operation of the Indian Valley Dam and Reservoir will not affect the water surface levels of Clear Lake.

EIS-CA-73-1678-D/GA PC$3.50
Federal Highway Administration, Sacramento, Calif. California Div.
SIXTY-INCH (60 IN) REINFORCED CONCRETE PIPE STORM DRAIN FROM THE INTERSECTION OF RAYMOND AVENUE AND WALNUT STREET TO THE INTERSECTION OF ARROYO PARKWAY AND HOLLY STREET IN THE CITY OF PASADENA.
Draft environmental impact statement.
23 Oct 73, 29p FHWA-CA-EIS-73-11-D ELR-73-1678
Prepared by California State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Storm sewers), (*California, Environmental impact statements), Construction, Trees(Plants), Removal, Parks.
Identifiers: Pasadena(California).

A 60-inch Reinforced Concrete Pipe is proposed to be constructed through the Memorial Park in the City of Pasadena. The drain would be a part of the drainage system of Interstate 210 now under construction; Fair Oaks Avenue to Rosemead Boulevard in the City of Pasadena, a segment of 4.5 miles of 10-lane freeway. Only 0.41 acre (30 ft wide strip) will be disturbed during the construction period of three weeks. The noise level inside and adjacent to the park area will increase due to the operation of the construction equipment. The park will be restored to the original condition after the construction, therefore, the environmental impact on the park will be of a temporary nature.

EIS-CA-73-1688-F/GA PC$18.50/MF$1.45
Directorate of Licensing (AEC), Washington, D.C.
OPERATION OF SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1. SOUTHERN CALIFORNIA EDISON COMPANY, AND THE SAN DIEGO GAS AND ELECTRIC COMPANY, DOCKET NO. 50-206.
Final environmental impact statement.
24 Oct 73, 329p ELR-73-1688
Supersedes report No. EIS-CA-73-0844-D.

Descriptors: (*Environmental impact statements, *Nuclear power plants), (*California, Environmental impact statements), Pressurized water reactors, Licenses, Wildlife, Recreation, Land use, Effluents.
Identifiers: San Onofre generating station, San Diego County(California).

The proposal is the conversion of a provisional operating license into a full-term operating license and the issuance of this license jointly to the Southern California Edison Company and the San Diego Gas and Electric Company for the operation of Unit 1 of the San Onofre Nuclear Generating Station located on the Pacific Coast in the State of California, County of San Diego. The unit employs a pressurized water reactor to produce up to 1347 megawatts thermal. A steam turbine-generator uses this heat to provide a net power output of 430 electrical megawatts. The exhaust steam is cooled by a once-through flow of water obtained from and discharged to the Pacific Ocean. A summary of environmental impacts is included.

EIS-CO-73-1608-F/GA PC$5.25/MF$1.45
National Park Service, Omaha, Nebr. Midwest Regional Office.

PROPOSED BLACK CANYON OF THE GUNNISON NATIONAL MONUMENT, COLORADO.
Final environmental impact statement.
11 Oct 73, 64p ELR-73-1608, FES-73-56
Supersedes report No. PB-206 169-D.

Descriptors: (*Environmental impact statements, *National parks), (*Colorado, Environmental impact statements), Management, Regulations, Canyons, Mesas(Landforms), Wildlife.
Identifiers: Black Canyon of the Gunnison National Monument.

The National Park Service proposes a plan for the establishment and management of an 8,780-acre wilderness area. The area, which is about 64% of the monument's acreage, embraces all of the canyon and a portion of the mesa and bench land. Environmental impacts discussed include ecological, social and economical consideration. The values of these impacts are more beneficial than detrimental. Some of the adverse effects are: possible rationed use, restrictions on backcountry facility development, shifting of recreational needs to other areas in the region, increased costs of maintenance, and curtailment of certain research projects. The impacts are generally offset by favorable environmental effects or they can be minimized.

EIS-CO-73-1613-F/GA PC$6.00/MF$1.45
National Park Service, Omaha, Nebr. Midwest Regional Office.
PROPOSED WILDERNESS AREA COLORADO NATIONAL MONUMENT, COLORADO.
Final environmental impact statement.
11 Oct 73, 76p ELR-73-1613, FES-73-58
Supersedes report dated Jan 72, PB-206 273-D.

Descriptors: (*Environmental impact statements, *National parks), (*Colorado, Environmental impact statements), Wildlife, Management, Forest land.
Identifiers: Colorado National Monument.

The National Park Service, Department of the Interior, proposes that 44 percent of Colorado National Monument, 7,700 acres, be designated as wilderness and be added to the National Wilderness Preservation System. Among the impacts resulting from wilderness designation would be prohibition of backcountry visitor facilities, curtailment of permanent research installations, restrictions on mechanized equipment, restrictions on road construction, and prohibition of recreational developments. Considering the present environment, the availability of similar ecosystems for research elsewhere, and regional recreational opportunities scattered throughout the Colorado plateau country, establishment of a wilderness area within the monument is expected to have minor adverse impact, either socially, economically, or ecologically.

EIS-CO-73-1644-D/GA PC$5.75
Rocky Mountain National Park, Colo.
PROPOSED ROCKY MOUNTAIN WILDERNESS, ROCKY MOUNTAIN NATIONAL PARK, COLORADO.
Draft environmental impact statement.
15 Oct 73, 72p ELR-73-1644, DES-73-63

Descriptors: (*Environmental impact statements, *National parks), (*Colorado, Environmental impact statements), Management, Forest land, Wildlife, Rocky Mountains.
Identifiers: Rocky Mountain National Park.

The National Park Service proposes a plan for the establishment of a wilderness area with five units totaling 238,000 acres within Rocky Mountain National Park, Colorado, in accordance with the Wilderness Act of 1964. A total of 6409 more acres are recommended for potential wilderness addition. Environmental impacts are discussed in terms of physical, biological, social, and economic considerations. Principal benefit of the proposal is that of additional legislative protection to large units of unaltered natural environment. Some of the adverse effects are: removal of management options, rationed use, restrictions on backcountry roads, developments and use of mechanized equipment, increased costs of trail maintenance, restriction of certain research projects, and management practices. These impacts are generally considered offset by favorable environmental effects.

EIS-CO-73-1645-D/GA PC$7.25
Rocky Mountain National Park, Colo.
PROPOSED MASTER PLAN, ROCKY MOUNTAIN NATIONAL PARK, COLORADO.
Draft environmental impact statement.
15 Oct 73, 103p ELR-73-1645, DES-73-62

Descriptors: (*Environmental impact statements, *National parks), (*Colorado, Environmental impact statements), Management, Natural resources, Wildlife, Recreation, Rocky Mountains.
Identifiers: Rocky Mountain National Park.

The National Park Service proposes a master plan for the management and use of Rocky Mountain National Park which provides for increased public enjoyment of park experiences, with reduced impact on park resources. Large sections of the park are proposed for wilderness. Boundary adjustments would be made to include ecosystems important to the park. The master plan proposes to continue the direction of management away from the consumptive uses characteristic of pre-park days, toward further restoration of natural and historic resources. The public will be encouraged to accept a way of life that is more in harmony with the environment while visiting the park. Some of the adverse effects are: reduction or elimination of the concessioners operations, high costs of pollution abatement, and facility obliteration, restriction of visitor use, and shifting of recreational uses to other areas. Some impact to the economic and social communities would result from elimination of development on private lands acquired in boundary adjustments.

EIS-CT-73-1595-D/GA PC$3.25
Corps of Engineers, Waltham, Mass. New England Div.
BEACH EROSION CONTROL PROJECT SHERWOOD ISLAND STATE PARK, WESTPORT, CONNECTICUT.
Draft environmental impact statement.
5 Oct 73, 23p ELR-73-1595

Descriptors: (*Environmental impact statements, *Breakwaters), (*Connecticut, Environmental impact statements), Beach erosion, Erosion control, Benthos, Turbidity, Construction, Long Island Sound.
Identifiers: Sherwood Island State Park, Fairfield County(Connecticut), Westport(Connecticut).

Beach widening and sand retention structures are proposed along 6,000 feet of shorefront at Sherwood Island State Park, Town of Westport, Fairfield County, Connecticut. Environmental impacts include restoration and protection of valuable beach fronting on Long Island Sound, and disturbances to aquatic biota and turbidity during construction.

EIS-CT-73-1610-F/GA PC$18.50/MF$1.45
Directorate of Licensing (AEC), Washington, D.C.
HADDAM NECK (CONNECTICUT YANKEE) NUCLEAR POWER PLANT, CONNECTICUT YANKEE ATOMIC POWER COMPANY, DOCKET NO. 50-213.
Final environmental impact statement.
11 Oct 73, 328p ELR-73-1610
Supersedes report No. EIS-CT-73-0517-D.

Descriptors: (*Environmental impact statements, *Nuclear power plants), (*Connecticut, Environmental impact statements), Licenses, Pressurized water reactors, Cooling water, Water pollution, Radioactive wastes, Radiation effects, Air pollution, Radiation hazards, Connecticut River.
Identifiers: Connecticut Yankee power reactor, Hartford(Connecticut), Thermal pollution.

The project proposes the conversion of the provisional operating license to a full-term operating license for the Haddam Neck Nuclear Power Plant (commonly known as the Connecticut Yankee Atomic Power Plant. The site is on the east shore of the Connecticut River, about 22 miles southsoutheast of Hartford and about 16 miles north of Long Island Sound. The reactor is a pressurized water reactor which is operating under a provisional license from the AEC to generate 1825 MWt (megawatts thermal) and 600 MWe (megawatts electrical), which were the power ratings considered in assessing the environmental effects. The exhaust steam from the turbine is cooled by water pumped from the Connecticut River, then returned to the river by way of a 1.16 mile-long canal. Environmental impacts and adverse effects are discussed.

EIS-DE-73-1670-F/GA PC$7.25/MF$1.45
Federal Highway Administration, Dover, Del. Delaware Div.
RECONSTRUCTION OF DELAWARE ROUTE 397, OTT'S CHAPEL ROAD, NEW CASTLE COUNTY, DELAWARE.
Final environmental impact statement.
18 Oct 73, 105p FHWA-DE-EIS-73-07-F ELR-73-1670
Supersedes EIS-DE-72-5816-D. Prepared by Delaware State Dept. of Highways and Transporation.

Descriptors: (*Environmental impact statements, *Highway bridges), (*Delware, Environmental impact statements), Construction, Traffic safety, Traffic engineering, Roads, Upgrading.
Identifiers: Delaware route 397, New Castle County(Delaware), Newark(Delaware).

The proposed highway improvement is the construction of a bridge over the Penn Central Railroad and the upgrading of Ott's Chapel Road which is located southwest of the City of Newark in New Castle County, Delaware. Safety will be improved by the elimination of a hazardous railway-highway grade crossing, traffic flow will be improved, and no adverse effects are expected on proposed land use plans.

EIS-DE-73-1675-D/GA PC$5.00
General Services Administration, Washington, D.C.
PROPOSED DISPOSAL OF THE U.S. CUSTOM HOUSE BUILDING WILMINGTON, DELAWARE (REPORT NUMBER G-DE-436-ES-1) TO THE CITY OF WILMINGTON HOUSING AUTHORITY.
Draft environmental impact statement.
23 Oct 73, 58p ELR-73-1675

Descriptors: (*Environmental impact statements, *Urban renewal), (*Delaware, Environmental impact statements), Buildings, Retaining, Demolition, History.
Identifiers: Wilmington(Delaware), Historic buildings.

The General Services Administration (GSA) proposes to dispose of a tract comprising .016 of an acre of land in the city of Wilmington, Delaware. The tract is improved with a Custom House Building erected in 1857. Disposal will be by negotiated sale to the City. While the original concept for the Civic Center project includes removal of the Custom House, House is eligible for listing on the National Register of Historic Places. Demolition of the building will result in its irretrievable loss.

EIS-FL-73-1593-F/GA PC$9.50/MF$1.45
Federal Highway Administration, Tallahassee, Fla. Florida Div.
MILLS AVENUE EXTENSION FROM ROBINSON TO SOUTH STREET IN ORLANDO, INCLUDING CHURCH STREET EXTENSION AND JEFFERSON STREET IMPROVEMENT, ORANGE COUNTY, FLORIDA.
Final environmental impact statement.
4 Oct 73, 147p FHWA-FLA-EIS-73-01-F ELR-73-1593
Supersedes report No. EIS-FL-73-0256-D. Prepared by City of Orlando Dept. of Housing and Urban Development, and State of Florida Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Florida, Environmental impact statements), Urban areas, Construction, Traffic engineering, Eminent domain.
Identifiers: Florida route 526, Orange County(Florida).

The project proposes the extension of Mills Avenue south of Robinson Street (SR 526) to South Street. Between Robinson and Pine Streets, the impovement would consist of two separate roadways on the now existing Mills and Thornton Avenues. Each would be a three-lane, one-way facility. Between Pine and South Streets, the facility would consist of a divided cross section with two lanes and additional turning lanes in each direction. Also included in the proposed project is the extension of Church Street, a two-lane, residential street, from Hyer Avenue to the new Mills Avenue extension. The project would displace approximately 50 individuals and would remove approximately 230 trees ranging from small landscaping citrus trees to 48 inch oaks. No schools, religious or public institutions would be directly affected. The project would be means of fill reduce the area of Lake Lawsona from approximately 10.4 acres to approximately 10.0 acres, but would provide improvement of the quality of the lake by draining it and allowing muck consolidation.

EIS-FL-73-1600-F/GA PC$25.00/MF$1.45
Environmental Protection Agency, Atlanta, Ga. Region IV.
NORTH DADE COUNTY REGIONAL COLLECTION, TREATMENT AND DISPOSAL SYSTEM.
Final environmental impact statement.
10 Oct 73, 460p ELR-73-1600
Supersedes report no. EIS-FL-73-0731-D.

Descriptors: (*Environmental impact statements, *Sewage treatment), (*Florida, Environmental impact statements), Construction, Facilities, Waste water, Waste disposal, Outfall sewers, Sludge disposal.
Identifiers: North Dade County(Florida).

The proposed project includes an 80 million gallons per day (mgd) secondary treatment facility to be constructed at the Interama site east of Biscayne Boulevard in two phases, with immediate construction of a 60 mgd phase, and major elements of an integrated sewage collection system to be constructed in the northern portion of Dade County over a period of three to five years. The method of wastewater disposal will be via a 22,850-foot long, 90-inch diameter ocean outfall traveling from the proposed treatmeat plant site at Interama to a point approximately 500 feet beyond the seaward reef, terminating in the Atlantic Ocean approximately 12,500 feet from shore in approximately 90 feet of water. Sludge disposal will be accomplished through pumping of separated solids in a closed conduit from Interama to an existing sludge disposal area on Virginia Key. Long-term adverse impacts may include minor damage to the ocean bottom along the path of outfall construction, including: Damage to the offshore reef; minor chemical and biological degradation of the ocean waters in the vicinity of the outfall terminus; possible localized contamination of groundwaters in the vicinity of the sludge disposal site; irretrievable commitment of potentially recycleable wastewaters; and disruption of the existing ecology of portions of the Interama site.

EIS-FL-73-1616-D/GA PC$10.25
Army Engineer District, Jacksonville, Fla.
UPPER ST. JOHNS RIVER BASIN CENTRAL AND SOUTHERN FLORIDA PROJECT.
Draft environmental impact statement.
11 Oct 73, 164p ELR-73-1616

Descriptors: (*Environmental impact statements, *Channel improvements), (*Florida, Environmental impact statements), Levees, Spillways, Turbidity, Land use, Flood control, Water storage, Saint Johns River Basin, Fisheries.

The report includes proposals for the upper St. Johns River project located in Central and Southern Florida. These are: close the gaps presently remaining in upland Levee 73 which forms the eastern boundary of Jane Green Lake; remove the existing plugs in the Levee 73 borrow canal; perform selective clearing in the Taylor, Cox, Wolf, Pennywash, and Jane Green Creeks, portions of the Jane Green Lake upland complex; construct Spillway Structure 53 and its associated tieback levees; construct upland Levees L-72 and L-71; and, construct Spillway Structures S-162, S-160, and S-159 with its downstream floodway levees, plus the irrigation release culverts at Spillway 160. Environmental impacts includes: Water pollution, Turbidity, Land use; Water storage and conservation, Fisheries, and Flood control.

EIS-FL-73-1634-F/GA PC$14.00/MF$1.45
Federal Highway Administration, Tallahassee, Fla. Florida Div.
STATE ROAD A-1-A (BLUE HERON BOULEVARD) INTRACOASTAL WATERWAY BRIDGE AND APPROACHES, EAST OF US 1 TO SINGER ISLAND, RIVEIRA BEACH, PALM BEACH COUNTY, FLORIDA.
Final environmental impact statement.
12 Oct 73, 237p FHWA-FLA-EIS-72-27-F ELR-73-1634
Supersedes report No. EIS-FL-72-5206-D. Prepared by Florida State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highway bridges), (*Florida, Environmental impact statements), Construction, Bridge approaches, Dredging, Benthos, Water traffic, Improvement, Traffic engineering.
Identifiers: Palm Beach County(Florida), Florida route A-1-A, Intracoastal waterway.

The proposed project involves construction of a high level, fixed span, multi-lane bridge and approaches across the Intracoastal Waterway. Approximate length is 1.0 miles. This portion of Florida route A-1-A serves as a major arterial route and is severely affected by the heavy waterborne traffic of the Intracoastal, which is currently spanned by an old bascule bridge with a 15-foot vertical clearance. The major impacts are positive.

EIS-FL-73-1652-F/GA PC$10.75/MF$1.45
Federal Highway Administration, Tallahassee, Fla. Florida Div.
INTERSTATE ROUTE 75, VICINITY OF FT. MYERS IN LEE COUNTY TO ANDYTOWN IN BROWARD COUNTY, FLORIDA.
Final environmental impact statement.
17 Oct 73, 175p FHWA-FLA-EIS-71-6-F ELR-73-1652
Supersedes report No. PB-203 769-D. Prepared by Florida State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Florida, Environmental impact statements), Construction, Divided highways, Drainage, Wildlife, Access roads, Land development.
Identifiers: Lee County(Florida), Broward County(Florida), Interstate highway 75.

The project is construction of a 114 mile segment of four-lane divided Interstate 75 Highway in Lee County and Route 27 at Andytown, west of Fort Lauderdale in Broward Counties, Florida. Significant positive impact of the project on the environment can be achieved by improvements in surface water flow and by improved wildlife habitat. Adverse impact of the project on the environment appears to be unimportant.

EIS-FL-73-1664-F/GA PC$15.00/MF$1.45
Federal Highway Administration, Tallahassee, Fla. Florida Div.
STATE ROAD 93 (I-75), LEE, CHARLOTTE, AND SARASOTA COUNTIES, FLORIDA.
Final environmental impact statement.
18 Oct 73, 260p FHWA-FLA-EIS-72-15-F ELR-73-1664
Supersedes report No. EIS-FL-72-5368-D. Prepared by Florida State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Florida, Environmental impact statements), Limited access highways, Hydrology, Wildlife, Relocation, Residential buildings.
Identifiers: Florida route 93, Lee County(Florida), Charlotte County(Florida), Sarasota County(Florida).

The proposed facility is to be a four lane, limited access, divided highway of Interstate standards, 52.4 miles long, beginning east of Ft. Myers at SR 82 approximately one mile east of the SR 82-SR 80B intersection and proceeding north to the Caloosahatchee River and then northwest to the Charlotte-Lee County line approximately three miles east of SR 45, then northwesterly through the Cecil M. Webb Wildlife Management Area passing just east of South Punta Gorda Heights, in Charlotte County, and proceeding northwest into Sarasota County, and then west through portions of North Port Charlotte, thence to just west of the Myakka River in Sarasota County, Florida. Major environmental impacts will be the Caloosahatchee River, Peace River, and Myakka River crossings, the Cecil M. Webb Wildlife Management Area crossing, the displacement of people and the possible disruption of surface hydrology in the area. Air and noise pollution will increase.

EIS-FL-73-1684-D/GA PC$7.50
Army Engineer District, Jacksonville, Fla.
ST. LUCIE INLET, FLORIDA.
Draft environmental impact statement. (Revised).
24 Oct 73, 107p ELR-73-1684

Descriptors: (*Environmental impact statements, *Channel improvements), (*Florida, Environmental impact statements), Navigation, Beach erosion, Beach nourishment, Jetties, Construction, Marine microorganisms.
Identifiers: Martin County(Florida).

The proposed project is to provide safe navigation in the St. Lucie Inlet by deepening the channel to 10 feet through the inlet and 7 feet deep across part of the Indian River to the Intracoastal Waterway. The north jetty will be extended 500 feet and a 1,200-foot south jetty will be constructed with a walkway in connection with the proposed St. Lucie Inlet State Park. The project also provides for beach erosion control through initial replenishment and periodic nourishment by pumping from the channel and an impoundment basin. About 172,500 yards of sand and 307,500 cubic yards of rock are to be removed during initial project construction. The sand will be used for beach nourishment and the rock will be placed in an existing disposal area west of the north jetty. Bottom dwelling organisms will be removed by the channel deepening and non-mobile surf zone organisms will be covered by the beach nourishment. Mobile organisms will be temporarily displaced by project operations and turbidity.

EIS-FL-73-1692-D/GA PC$5.50
Coast Guard, Washington, D.C.

PROPOSED FIXED HIGHWAY BRIDGE ACROSS THE ATLANTIC INTRACOASTAL WATERWAY IN THE CITIES OF HOLLY HILL AND DAYTONA BEACH, VOLUSIA COUNTY, FLORIDA.
Draft environmental impact statement.
25 Oct 73, 68p ELR-73-1692

Descriptors: (*Environmental impact statements, *Highway bridges), (*Florida, Environmental impact statements), Streets, Rivers, Access roads, Eminent domain, Traffic engineering, Site surveys.
Identifiers: Intracoastal waterway, Holly Hill(Florida), Daytona Beach(Florida).

Approval is sought of the location and plans of a proposed fixed highway bridge over Atlantic Intracoastal Waterway (Halifax River) from Flomich Street in Holly Hill to Plaza Boulevard in Daytona Beach, Florida. The bridge will furnish additional access from the mainland to the beach area. A significant number of human dwellings will be displaced; a total of 39 homes and 3 businesses are involved. There will be no Section 4(f) involvement concerning this project. No other significant adverse impact is foreseen.

EIS-HI-73-1602-D/GA PC$6.50
Federal Highway Administration, Honolulu, Hawaii. Hawaii Div.
CONSTRUCTION OF AN ON-RAMP TO THE EXISTING STUB AT INTERSTATE ROUTE H-1 AND KAPIOLANI BOULEVARD.
Draft environmental impact statement.
10 Oct 73, 87p FHWA-HI-EIS-73-03-D ELR-73-1602
Prepared by State of Hawaii Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Ramps), (*Hawaii, Environmental impact statements), Construction, Traffic engineering, Right of way acquisition, Traffic safety, Improvement.
Identifiers: Honolulu(Hawaii), Interstate highway H-1.

The Kapiolani interchange on-ramp is located in Honolulu, Hawaii, approximately 700 feet east of the existing King Street on-ramp on Interstate route H-1. The purpose of the proposed improvement is to facilitate traffic movement from Central Honolulu to Eastern Honolulu. This improvement will provide an on-ramp for outbound Kapiolani Boulevard traffic to Interstate Route H-1 eastbound. The Interstate design standards have recognized public safety in all aspects and no compromises will be made. Additional right-of-way will be required from land zoned for high density apartment and/or commercial uses. The ramp design will minimize the impact on these properties.

EIS-HI-73-1631-D/GA PC$15.50
Environmental Protection Agency, San Francisco, Calif. Region IX.
MAMALA BAY WASTEWATER TREATMENT AND DISPOSAL SYSTEM, OAHU, HAWAII.
Draft environmental impact statement.
12 Oct 73, 268p D-EPA-24002-HI ELR-73-1631

Descriptors: (*Environmental impact statements, Sewage treatment), (*Hawaii, *Sewage treatment), Construction, Oahu, Water quality, Water reclamation, Outfall sewers, Pearl Harbor, Mamala Bay.
Identifiers: *Honolulu(Hawaii), Water pollution control, Secondary sewage treatment.

The proposed action involves the construction of a regional wastewater treatment and disposal system to serve the Mamala Bay area (Honolulu and western suburbs) of Oahu, Hawaii. The area will be served by two unconnected collection, treatment and disposal systems. The project will result in a significant improvement in coastal and estuarine water quality. The discharge of 55 mgd of raw wastes off Sand Island and 14 mgd of inadequately treated wastes into Pearl Harbor will be eliminated. Project construction will result in a number of short-term, minor adverse impacts. These include noise, dust, inconvenience to residents, removal of limited acreage from agricultural production, and turbidity and disturbance of benthic organisms in underwater sections.

EIS-ID-73-1628-D/GA PC$5.50
Forest Service, Missoula, Mont. Northern Region.
SALMON RIVER WILDERNESS AND IDAHO WILDERNESS.
Draft environmental impact statement.
12 Oct 73, 68p USDA-FS-DES/(Leg)-74-36 ELR-73-1628

Descriptors: (*Environmental impact statements, *National parks), (*Idaho, Environmental impact statements), Wildlife, Management, Regulations, Forest land.
Identifiers: Salmon River Wilderness.

The report presents proposed legislation to establish a Salmon River Wilderness and an Idaho Wilderness as National Forest units of the National Wilderness Preservation System in Custer, Idaho, Lemhi, and Valley Counties, State of Idaho. Impacts on the natural and the primitive character of the land by Wilderness classification would be more beneficial than detrimental. Some of the adverse effects are: loss of timer through uncontrolled insect and disease infestations; reduction of renewable resource goods and services available to the economy; reduced opportunities for developed outdoor recreation activities; reduction of motorized access; attraction of more people which may lessen the Wilderness experience; no provision for comfort and convenience improvements; greater potential losses from fire because of modified fire control measures; and restriction of exploration and development of mineral values in order to protect the Wilderness character of the land. Some of these impacts can be minimized by use of controls or restrictions, while still maintaining the Wilderness environment and natural ecosystems.

EIS-ID-73-1639-F/GA PC$10.50/MF$1.45
Targhee National Forest, St. Anthony, Idaho.
LAND USE PLAN FOR THE CENTENNIAL MOUNTAIN PLANNING UNIT.
Final environmental impact statement.
15 Oct 73, 166p ELR-73-1639, USDA-FS-FES(Adm)-74-6
Supersedes report No. EIS-ID-73-1128-D.

Descriptors: (*Environmental impact statements, *National parks), (*Idaho, Environmental impact statements), Land use, Management, Centennial Mountain, Natural resources.
Identifiers: Targhee National Forest.

The project proposes land use management of the Centennial Mountain Planning Unit, Dubois and Island Park Ranger Districts, Targhee National Forest, located in Clark and Fremont Counties, Idaho. The Planning Unit contains 193,000 acres of National Forest land. There will be environmental impacts on all natural resources present in the planning unit. Proposed activities such as timber harvesting, livestock grazing, mining, road construction, and outdoor recreation will affect vegetative cover, esthetics, fish and wildlife, soils, and water quality. Management of the unit will affect local economy, particularly in the livestock and timber industries, and will determine to what extent the area will contribute to meeting national needs for food, shelter, and enjoyment. Adverse effects of the proposed management will include minor, temporary soil movement, changes in vegetative cover, particularly from timber harvesting and mining, some loss of isolation for wilderness species of wildlife, changes in scenic values, some temporary increases in fire hazard and an increased fire risk, and loss of area available for motor vehicle use.

EIS-ID-73-1646-F/GA PC$13.50/MF$1.45
Sawtooth National Forest, Twin Falls, Idaho.
SOUTH BOISE-WOOD RIVER LAND USE PLAN, SAWTOOTH NATIONAL FOREST.
Final environmental impact statement.
16 Oct 73, 230p ELR-73-1646, USDA-FS-FES(Adm)-74-10
Supersedes report No. EIS-ID-73-1157-D.

Descriptors: (*Environmental impact statements, *National parks), (*Idaho, Environmental impact statements), Management, Land use, Natural resources, Recreational facilities, Wildlife.
Identifiers: Sawtooth National Forest.

The South Boise-Wood River Planning Unit contains approximately 593,000 acres of National Forest land on the Sawtooth National Forest in Blaine, Camas, and Elmore Counties in south-central Idaho. The Land Use Plan sets forth the allocation of land to resource uses and activities; establishes objectives; documents management direction, decisions, and necessary coordination between resource uses; and provides for the protection, use, and development of the various resources within the unit. The uses provided for includes moderate levels of consumptive resource uses, a moderate but growing level of recreation use, and significant areas to remain undeveloped with the options for future management remaining open. The major environmental impacts will be on vegetation, soil, scenics, wildlife, water, and roadless area values due to a broad range of resource uses and activities. Minor adverse effects will be from temporary stream sedimentation due to development activities, minimal alteration of natural landscape characteristics by cultural practices, and from various recreation activities. A variety of management techniques and measures are available for minimizang adverse effects.

EIS-IL-73-1625-F/GA PC$7.50/MF$1.45
Federal Highway Administration, Springfield, Ill. Illinois Div.
FEDERAL AID URBAN SYSTEM ROUTE 8398 PEORIA COUNTY PROJECT M-8398 (001), SECTION 29-CP, GLEN AVENUE, CITY OF PEORIA, ILLINOIS.
Final environmental impact statement.
12 Oct 73, 107p FHWA-ILL-EIS-73-02-F ELR-73-1625
Supersedes report No. EIS-IL-73-0288. Prepared by Illinois State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Illinois, Environmental impact statements), Construction, Central city, Air pollution, Noise(Sound).
Identifiers: Illinois route 8398, Peoria County(Illinois), Peoria(Illinois).

The proposed project is the portion of FAU Route 8398, from U.S. Route 150 easterly to FAP Route 40 (Marked 88), Knoxville Avenue. This section of highway travels through commercial and residential areas of the City and is almost completely developed at this time. The total length of the proposed improvement is approximately 2 miles. The proposed improvement will be built on the present alignment. The probable impact of the project on the environment will be a minimal effect on air and water pollution. No homes or businesses will be displaced. It will relieve much of the present congestion and expedite the free flow of traffic on this highway. The probable impact of the improvement will increase the noise levels above the present levels which exceed the standards in PPM 90-2 at certain locations. The area through which this improvement passes is residential and commercial, noise abatement procedures will be difficult, and aesthetically unpleasing due to right of way limitations.

EIS-IN-73-1656-F/GA PC$4.25/MF$1.45
Soil Conservation Service, Indianapolis, Ind.
FALL CREEK WATERSHED, WARREN COUNTY, INDIANA.
Final environmental impact statement.

17 Oct 73, 42p ELR-73-1656, USDA-SCS-ES-WS(Adm)-73t52-F
Supersedes report No. EIS-IN-73-0670-D.

Descriptors: (*Environmental impact statements, *Multiple purpose reservoirs), (*Indiana, Environmental impact statements), Flood control, Recreational facilities, Employment, Farms, Pollution.
Identifiers: Warren County(Indiana).

The proposal concerns a project for watershed protection, flood prevention and recreation in Warren County, Indiana, to be implemented under authority of the Watershed Protection and Flood Prevention Act. (Public Law 566, 83rd Congress, 68 Stat. 666), as amended. Land treatment performed on 1,306 acres will reduce erosion by 30%. Structural measures will reduce flood damages by 84% and sediment yield by 53%. Williamsport will have 100-year frequency flood protection. Two hundred thirty-three acres of land will be acquired and developed for public use. A 64 acre lake for fishing and recreational uses will be created, and an 80 acre park with planned recreational facilities will be developed, to provide for an estimated 43,100 recreation visits annually. Rural development will be stimulated through increased demands for retail goods and services and seasonal employment. The reservoir and park development will remove 233 acres from agricultural production. Fifty-nine acres of trees will be cleared or inundated in the dam, spillway and reservoir area. The impoundment will inundate about one mile of intermittent stream.

EIS-IN-73-1666-F/GA PC$3.75/MF$1.45
Army Engineer District, Louisville, Ky.
WEST TERRE HAUTE LEVEE, WABASH RIVER, INDIANA, WABASH RIVER BASIN.
Final environmental impact statement.
18 Oct 73, 31p ELR-73-1666
Supersedes report No. EIS-IN-73-0281-D.

Descriptors: (*Environmental impact statements, *Levees), (*Indiana, Environmental impact statements), Embankments, Flood control, Shore protection, Wabash River.
Identifiers: Vigo County(Indiana).

West Terre Haute project, is an urban levee that consists of 10,115 feet of earth levee, 845 feet of concrete wall, 2,045 feet of railroad fill slope blanket, 1,925 feet of raised street, and one pumping plant. The project is located in Vigo County, Indiana, on the right bank of the Wabash River, 212.0 to 214.6 miles above the mouth. Land required for the project totals about 60 acres and about 440 acres are protected by the levee against floods having an average recurrent frequency of once each 100-year period. Construction of levee and floodwall was 99% complete as of January 1973. The project is about 90 percent overall complete. Environmental impacts and adverse environmental effects are discussed.

EIS-KS-73-1621-F/GA PC$15.75/MF$1.45
Army Engineer District, Tulsa, Okla.
BIG HILL LAKE, BIG HILL CREEK, KANSAS.
Final environmental impact statement.
11 Oct 73, 271p ELR-73-1621
Supersedes report No. EIS-KS-72-4859-D.

Descriptors: (*Environmental impact statements, *Multiple purpose reservoirs), (*Kansas, Environmental impact statements), Lakes, Flood control, Water supply, Recreation, Wildlife, Land use, Big Hill Creek.
Identifiers: Labette County(Kansas).

The proposed project is located in Labette County about 4.5 miles east of Cherryvale, Kansas, on Big Hill Creek about 33 miles above its confluence with the Verdigris River. Action consists of the construction of a lake for flood control, water supply, and recreation. Environmental impacts include land use; adverse effect on wildlife; and, noise and air pollution during construction.

EIS-KS-73-1622-F/GA PC$11.00/MF$1.45
Federal Highway Administration, Kansas City, Kans. Kansas Div.
THE IMPROVEMENTS OF U.S. HIGHWAY 77 IN COWLEY COUNTY FROM THE NORTH URBAN LIMITS OF WINFIELD, NORTH APPROXIMATELY 16 MILES TO THE COWLEY-BUTLER COUNTY LINE.
Final environmental impact statement.
11 Oct 73, 179p FHWA-KANS-EIS-72-14-F ELR-73-1622
Supersedes report No. EIS-KS-72-4777-D.
Prepared by Kansas State Highway Commission.

Descriptors: (*Environmental impact statements, *Highways), (*Kansas, Environmental impact statements), Construction, Right of way acquisition, Highway bridges, Eminent domain, Relocation.
Identifiers: US highway 77, Cowley County(Kansas).

The project proposes upgrading 16.0 miles of U.S. Highway 77 from the North Urban Limits of Winfield, north to the Cowley-Butler County Line including right of way, grading, surfacing, bridges and all other construction necessary to provide a modern, safe facility. The new highway will provide a facility with higher capacity, increased mobility, and safer traffic movement. It is anticipated that the improvement would divert some local traffic from heavily overloaded county secondary roads. However, the project will necessitate adverse environmental effects which cannot be avoided: Land will be taken from private use and used for highway right of way; contractors' activities will result in temporary noise, air and surface water pollution; new areas will be exposed to automotive emissions; natural growth and wildlife cover will be lost; resources will be permanently committed.

EIS-KS-73-1642-D/GA PC$10.25
Federal Highway Administration, Kansas City, Kans. Kansas Div.
PROPOSED IMPROVEMENT ON NEW LOCATION OF K-96 TO FREEWAY STANDARDS WITH FULL CONTROL OF ACCESS BETWEEN K-254 AND K-96, US 54 (KELLOGG AVENUE) IN THE NORTHEAST WICHITA METROPOLITAN AREA, SEDWICK COUNTY, KANSAS.
Draft environmental impact statement.
15 Oct 73, 165p FHWA-KS-EIS-73-07-D ELR-73-1642
Prepared by State Highway Commission.

Descriptors: (*Environmental impact statements, *Highways), (*Kansas, Environmental impact statements), Construction, Freeways, Access roads, Interchanges, Frontage roads, Eminent domain.
Identifiers: Kansas route 96, Wichita(Kansas), Sedwick County(Kansas).

The project proposes to construct a new segment of Highway K-96, approximately ten miles in length, through the northeast quadrant of the Wichita Metropolitan Area. The proposed project would extend from K-254 on the northwest, southeasterly to K-96 - U.S. 54 east of Wichita and provide a Freeway facility with full control of access, interchanges, separations, and frontage roads where required. Environmental impacts include: Acquisition of land for right-of-way; severance of property; residences would be displaced; earthwork borrow from sources outside of the right-of-way; noise and light from highway sources. However, the project is a part of the system of the State Freeway System as designated by the Kansas Legislature and would effectively serve as a National Defense Route. The proposed improvement will enhance the economic stability of Wichita. The project will tend to reduce noise levels on surface streets and roads in the area by diverting substantial volumes of traffic, especially trucks, to the new Freeway. The proposed project will provide a fast, safe and efficient transportation facility for both through and local traffic movements.

EIS-KY-73-1638-D/GA PC$4.75
Federal Highway Administration, Frankfort, Ky. Kentucky Div.
HIGHWAY PROJECT US 41 A, FROM COUNTRY CLUB LANE IN MADISONVILLE TO MAIN STREET IN EARLINGTON, HOPKINS COUNTY, KENTUCKY S-728.
Draft environmental impact statement.
15 Oct 73, 52p FHWA-KY-EIS-73-11-D ELR-73-1638
Prepared by Kentucky State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Kentucky, Environmental impact statements), Construction, Traffic engineering, Right of way acquisition, Eminent domain, Relocation.
Identifiers: US highway 41, Hopkins County(Kentucky), Earlington(Kentucky), Madisonville(Kentucky).

The project proposed to improve U.S. Highway 41A to a four lane median divided highway between Country Club Lane in Madisonville and Robinson Street in Earlington. In Earlington it is proposed to make Main Street one-way north between Robinson and Railroad Streets, and Robinson Street one-way west and Railroad Street one-way east between Rutter Avenue and Main Street. The project will require the relocation of approximately 6 residences in Earlington. It will also require the acquisition of a strip of right-of-way from the Madisonville Country Club, undeveloped land between Madisonville and Earlington, and sparsely developed land in Earlington. Increases in air pollution should not be significant. Design noise level standards will not be exceeded. No streams, wildlife, or historical places will be adversely affected.

EIS-LA-73-1623-D/GA PC$6.25
Federal Aviation Administration, Washington, D.C. Airports Service.
NEW ORLEANS LAKEFRONT AIRPORT, MASTER PLAN STUDY, LOUISIANA.
Draft environmental impact statement.
11 Oct 73, 89p ELR-73-1623
Revision of Draft dated 18 Sep 72. Prepared by Waldemar S. Nelson and Co., Inc., New Orleans, La.

Descriptors: (*Environmental impact statements, *Airports), (*Louisiana, Environmental impact statements), Planning, Air traffic, Safety, Air pollution, Landscaping.
Identifiers: New Orleans Lakefront Airport, New Orleans(Louisiana).

The project proposes to develop a master plan for the existing New Orleans Lakefront Airport, Louisiana. This is a general aviation reliever to New Orleans International Airport in the National Airport System Plan. The Master Plan will determine the extent, type, and nature of needed development based on forecast short, intermediate, and long range aeronautical demand. Safety will be increased by having the maximum traffic volume over open water. Use level is expected to increase directly proportional to the national trends in population, GNP, total U.S. based aircraft, and general aviation operations. Air, water, and noise pollution is anticipated to be within acceptable limits; wastes will be disposed of in conformity with state and local health standards; landscaping and good housekeeping will prevent visual pollution. The proposals will not affect adversely the lake or land biology. Structures or persons will not be displaced and no historical or archeological sites will be affected.

EIS-MA-73-1603-F/GA PC$19.25/MF$1.45
Corps of Engineers, Waltham, Mass. New England Div.
ADDITION OF UNIT NO. 4, BRAYTON POINT GENERATING STATION, SOMERSET, MASSACHUSETTS.
Final environmental impact statement.
10 Oct 73, 344p ELR-73-1603

Supersedes report No. EIS-MA-73-1288-D.

Descriptors: (*Environmental impact statements, *Steam electric power generation), (*Massachusetts, Environmental impact statements), Construction, Electric power plants, Boilers, Turbogenerators, Cooling water, Water pollution, Biocides.
Identifiers: Brayton Point generating station, Somerset(Massachusetts).

The project proposes the addition of a 465-megawatt generating unit to the present capacity of 1025 megawatts of the existing three units. Modifications of the seawater intake and discharge facilities will be made. Plant addition will occupy 29,000 square feet of the 250-acre plant site and will consist of a boiler building, turbine building, stack, and substation addition. Environmental Impacts include: Generation of 465 megawatts of electricity; use of 14.4 million gallons per day of bay water for condenser cooling in addition to the 907.2 million gallons per day presently utilized for Units 1, 2 and 3; effects associated with gaseous releases; temperature rise in the mixing zone of the bay; effects associated with chemical wastes.

EIS-MA-73-1612-F/GA PC$8.50/MF$1.45
Corps of Engineers, Waltham, Mass. New England Div.
CHARLES RIVER DAM, BOSTON, MASSACHUSETTS.
Final environmental impact statement.
11 Oct 73, 127p ELR-73-1612
Supersedes report No. EIS-MA-73-0226-D.

Descriptors: (*Environmental impact statements, *Multiple purpose reservoirs), (*Massachusetts, Environmental impact statements), Construction, Dams, Pumping stations, Locks(Waterways), Charles River, Waterways(Transportation).
Identifiers: Boston(Massachusetts), Suffolk County(Massachusetts).

The project proposes to construct a multiple-purpose earth and concrete dam with river pumping facilities, three navigation locks, and a fish ladder. The project will enhance the aesthetic and recreational potential of the area, provide a flood free environment, eliminate extensive flood losses, improve movement of boat traffic, enhance water quality in the Charles River Basin and improve fish passage. Temporary inconveniences during construction will occur. Offshore disposal of polluted material will have to be removed for site preparation.

EIS-MD-73-1640-D/GA PC$17.00
Federal Highway Administration, Baltimore, Md. Maryland Div.
NATIONAL FREEWAY DEVELOPMENT PLANNING AND PRELIMINARY ENGINEERING STUDY, NATIONAL FREEWAY CUMBERLAND TO HANCOCK, ALLEGANY AND WASHINGTON COUNTIES, MARYLAND.
Draft environmental impact statement.
15 Oct 73, 298p FHWA-MD-EIS-73-08-D ELR-1973-1640
Prepared by Maryland State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Maryland, Environmental impact statements), Freeways, Construction, Rural areas, Natural resources, Wildlife, Eminent domain, Relocation.
Identifiers: National Freeway, Allegany County(Maryland), Washington County(Maryland).

The proposed project involves the location of a major highway improvement known as the National Freeway within the Appalachian region between Hancock and Cumberland, Maryland, approximately 30 miles in length. The study has been jointly supported by the Appalachian Development Highway Program and the Appalachian-Economic Development portion in an effort to maximize the benefits to Maryland from the opportunities created by the National Freeway. The proposal is to construct a four-lane divided highway featuring full control of access. The major environmental impact occurs to the natural resources of the corridor through the taking of forest, park, or wildlife management lands, the introduction of air pollution, and the noise disruption of predominately tranquil surroundings. Noise impacts will be most significant in residential areas directly adjacent to highway alignments--the most severe occurring along U.S. Highway 40 as measured in terms of number of residences affected.

EIS-MI-73-1589-F/GA PC$6.25/MF$1.45
Federal Highway Administration, Lansing, Mich. Michigan Div.
I-94, LAKESHORE DRIVE INTERCHANGE, RECONSTRUCTION, BERRIEN COUNTY, MICHIGAN.
Final environmental impact statement.
4 Oct 73, 83p FHWA-MICH-EIS-72-09-F ELR-73-1589
Supersedes report dated May 72, EIS-MI-72-4547-D. Prepared by Michigan State Dept. of Highways.

Descriptors: (*Environmental impact statements, *Highways), (*Michigan, Environmental impact statements), (*Interstate highway system, Environmental impact statements), Construction, Rural areas, Interstate highway transportation, Eminent domain.
Identifiers: Interstate highway 94, Berrien County(Michigan).

The project proposes reconstruction of the I-94 - Lakeshore Drive Interchange in Berrien County. Summary of environmental impacts: Provision for new and increased opportunities for economic growth and expansion in the project area and the Benton Harbor-St. Joseph Metropolitan area; provision of an interchange facility with increased operational safety; displacement of two businesses, a community players studio theatre and sixteen single family residences; loss of tax base for local units of government; minimal decrease in agricultural productivity; and removal of a number of a number of large shade trees, with resulting loss of aesthetic qualities.

EIS-MS-73-1651-F-SET/GA PC$81.00
Bureau of Land Management, Washington, D.C.
PROPOSED 1973 OUTER CONTINENTAL SHELF OIL AND GAS GENERAL LEASE SALE, OFFSHORE MISSISSIPPI, ALABAMA, AND FLORIDA.
Final environmental impact statement.
17 Oct 73, 1520p-in 5v ELR-73-1651-F
Set includes EIS-MS-73-1651-F-1 thru EIS-MS-73-1651-F-5.

EIS-MS-73-1651-F-1/GA PC$18.50/MF$1.45
Bureau of Land Management, Washington, D.C.
PROPOSED 1973 OUTER CONTINENTAL SHELF OIL AND GAS GENERAL LEASE SALE, OFFSHORE MISSISSIPPI, ALABAMA, AND FLORIDA. VOLUME 1. DESCRIPTION OF THE PROPOSAL AND ENVIRONMENTAL SETTING.
Final environmental impact statement.
17 Oct 73, 327p ELR-73-1651-F-1, FES-73-60-F-1
Supersedes report No. EIS-MS-73-1215-D.
Paper copy also available from NTIS $81.00/set of 5 reports as EIS-MS-73-1651-F-SET.

Descriptors: (*Environmental impact statements, *Offshore drilling), (*Oil fields, Leasing), Sales, Continental shelves, Oils, Mexico Gulf, Mississippi, Alabama, Florida, Oil recovery, Oil wells, Geology, Climate, Oceanography, Swamps, Ecology, Marine biology, Wildlife, Water pollution, Dredging.

The action is a proposed oil and gas lease sale, Outer Continental Shelf, (OCS) Gulf of Mexico. One hundred and forty-seven tracts (817,338 acres) of OCS lands are proposed for leasing action. The tracts are located offshore Mississippi, Alabama, and Florida. If implemented, this sale is tentatively scheduled to be held in late fall, 1973. All tracts offered pose some degree of pollution risk to the environment and adjacent shoreline. The risk potential is related to adverse effects on the environment and other resource uses which may result principally from accidental or chronic oil spillage. Each tract offered is subjected to a matrix analytical technique in order to evaluate significant environmental impacts should leasing and subsequent oil and gas exploration and production ensue.

EIS-MS-73-1651-F-2/GA PC$14.25/MF$1.45
Bureau of Land Management, Washington, D.C.
PROPOSED 1973 OUTER CONTINENTAL SHELF OIL AND GAS GENERAL LEASE SALE, OFFSHORE MISSISSIPPI, ALABAMA, AND FLORIDA. VOLUME 2. POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES.
Final environmental impact statement.
18 Oct 73, 242p ELR-73-1651-F-2, FES-73-60-F-2
Supersedes report No. EIS-MS-73-1215-D.
Paper copy also available from NTIS $81.00/set of 5 reports as EIS-MS-73-1651-F-SET.

Descriptors: (*Environmental impact statements, *Offshore drilling), (*Oil fields, Leasing), Sales, Continental shelves, Oils, Mexico Gulf, Mississippi, Alabama, Florida, Water pollution, Fisheries, Matrix methods, Risk, Petroleum pipelines, Natural resources.
Identifiers: Oil pollution, Oil spills, Water pollution effects(Animals), Water pollution effects(Plants).

Contents:
- Environmental impact of the proposed sale;
- Mitigating measures included in the proposed action;
- Unavoidable adverse environmental effects;
- Relationship between local short-term use and maintenance and enhancement of long-term productivity;
- Irreversible and irretrievable commitment of resources.

EIS-MS-73-1651-F-3/GA PC$19.75/MF$1.45
Bureau of Land Management, Washington, D.C.
PROPOSED 1973 OUTER CONTINENTAL SHELF OIL AND GAS GENERAL LEASE SALE, OFFSHORE MISSISSIPPI, ALABAMA, AND FLORIDA. VOLUME 3. ALTERNATIVES TO THE PROPOSED ACTION.
Final environmental impact statement.
17 Oct 73, 354p ELR-73-1651-F-3
Supersedes report No. EIS-MS-73-1215-D.
Paper copy also available from NTIS $81.00/set of 5 reports as EIS-MS-73-1651-F-SET.

Descriptors: (*Environmental impact statements, *Offshore drilling), (*Oil fields, Leasing), Sales, Continental shelves, Oils, Mexico Gulf, Mississippi, Alabama, Florida, Substitutes, Fuels, Coal, Oil shale, Hydroelectric power generation, Nuclear energy.

This volume sets forth alternatives to the proposed action. These are: Hold the sale in modified form; withdraw the sale; and, delay the sale.

EIS-MS-73-1651-F-4/GA PC$18.75/MF$1.45
Bureau of Land management, Washington, D.C.
PROPOSED 1973 OUTER CONTINENTAL SHELF OIL AND GAS GENERAL LEASE SALE, OFFSHORE MISSISSIPPI, ALABAMA, AND FLORIDA. VOLUME 4. CONSULTATION AND COORDINATION WITH OTHERS.
Final environmental impact statement.
17 Oct 73, 335p ELR-73-1651-F-4
Supersedes report No. EIS-MS-73-1215-D.
Paper copy also available from NTIS $81.00/set of 5 reports as EIS-MS-73-1651-F-SET.

Descriptors: (*Environmental impact statements, *Offshore drilling), (*Oil fields, Leasing), Sales, Continental shelves, Oils, Mexico Gulf, Mississippi, Alabama, Florida, National government, State government, Public opinion.

Volume four contains invited testimony and correspondence from federal and state agencies and public organizations concerning the draft statement. Also included is a transcript of testimony presented at a public hearing on the proposal.

EIS-MS-73-1651-F-5/GA PC$15.25/MF$1.45
Bureau of Land Management, Washington, D.C.
PROPOSED 1973 OUTER CONTINENTAL SHELF OIL AND GAS GENERAL LEASE SALE, OFFSHORE MISSISSIPPI, ALABAMA, AND FLORIDA. VOLUME 5. ATTACHMENTS.
Final environmental impact statement.
17 Oct 73, 262p ELR-73-1651-F-5
Supersedes report No. EIS-MS-73-1215-D.
Paper copy also available from NTIS $81.00/set of 5 reports as EIS-MS-73-1651-F-SET.

Descriptors: (*Environmental impact statements, *Offshore drilling), (*Oil fields, Leasing), Sales, Continental shelves, Oils, Mexico Gulf, Mississippi, Alabama, Florida, Data, Technical reports, Water pollution.

Contents: Attachments; OCS (Outer Continental Shelf) operating orders nos. 1 through 12 Gulf of Mexico; proposed schedule - provisional OCS leasing; description of blocks by water depth, distance from shore, acreage; report of the work group on OCS safety and pollution control. U.S. Geological Survey; geologic time chart and cross sections through the sale area; windroses portraying monthly wind patterns over the Gulf of Mexico; common names and scientific names for marine benthic animals; population, employment, personal income, and earnings by industry, historical and projected; (Department of Defense) fact sheet summarizing potential impact of possible leasing; matrix appendix; geological survey, OCS oil and gas operations lease management program; equipment available for emergency oil spill control and clean-up in the Gulf of Mexico; sample OCS lease form; list of persons who submitted oral and/or written testimony for public hearing record; depiction of blocks proposed for leasing.

EIS-MT-73-1598-D/GA PC$9.00
Bitterroot National Forest, Hamilton, Mont. Northern Region.
MULTIPLE USE PLAN, CAMP-TOLAN PLANNING UNIT IN MONTANA.
Draft environmental impact statement.
10 Oct 73, 138p ELR-73-1598, USDA-FS-DES(Adm)-74-33

Descriptors: (*Environmental impact statements, *National parks), (*Montana, Environmental impact statements), Management, Forest land, Lumbering, Roads, Wildlife, Recreational facilities.
Identifiers: Bitterroot National Forest, Ravalli County(Montana).

The proposed action is the implementation of a revised Multiple Use Plan for the Camp-Tolan Planning Unit, Sula Ranger District of the Bitterroot National Forest in Ravalli County, MT. A total of 39,848 acres of National Forest land is involved. The plan is of Level II intensity and provides the District Ranger with more detailed management guidance for the unit. The unit is divided into seven different management units of similar resource potential, use patterns, and management limitations. Key values within each management unit have been defined and management direction and guidance statements prepared. There are 13,100 acres of inventoried roadless area lying within the planning unit. Although 8428 acres will remain roadless, management keyed to road development will eventually eliminate the total acreage for consideration of the wilderness option for management. Forested landscapes will change as a result of management (primarily roading and timber harvest).

EIS-MT-73-1606-D/GA PC$14.50
Bureau of Indian Affairs, Billings, Mont.
CROW CEDED AREA COAL LEASE, WESTMORELAND RESOURCES MINING PROPOSAL.
Draft environmental impact statement.
11 Oct 73, 248p ELR-73-1606, DES-73-59

Descriptors: (*Environmental impact statements, *Coal), (*Montana, Environmental impact statements), Strip mining, Planning, Economic development, Income, Ethnic groups, Ground water.
Identifiers: Billings(Montana), Big Horn County(Montana).

The project proposes the approval of the mining plan for the Westmoreland Resources coal strip mining operation in Tract III of the Crow Indian Ceded Area, Big Horn County, Montana. Summary of environmental impact and adverse environmental effects: (a) Income received by the Crow Tribe from coal mined will be available for investment, tribal development or family income. Some social changes associated with urbanization are probable. (b) Surface characteristics, soil, vegetation and wildlife disruption will occur during the project life. (c) Dust and noise problems will increase in the vicinity. Sulfur dioxide emission levels will be reduced at midwestern utility plants using coal from this proposed site. (d) Ground water will be diverted from coal seam aquifers, causing a reduction in the potentiometric surface.

EIS-MT-73-1627-F/GA PC$8.75/MF$1.45
Kootenai National Forest, Libby, Mont.
MULTIPLE USE PLAN, BIG CREEK PLANNING UNIT, MONTANA.
Final environmental impact statement.
12 Oct 73, 134p ELR-73-1627, USDA-FS-FES(Adm)-73-57
Supersedes report dated Apr 73, EIS-MT-73-0590-D.

Descriptors: (*Environmental impact statements, *National parks), (*Montana, Environmental impact statements), Forest land, Management, Soil erosion, Employment, Pollution, Kootenai National Forest.
Identifiers: Lincoln County(Montana).

The project involves the implementation of a revised multiple use plan for the Big Creek Planning Unit, Rexford Ranger District, Kootenai National Forest and located in Lincoln County, Montana. The proposal affects approximately 91,000 acres of National Forest lands which have been stratified into nine management situations or units with similar resource implications. Environmental impacts include the following: Development activity will result in soil and vegetative disturbance which will cause temporary acceleration of soil erosion and sediment levels, as well as visual disturbance; temporary air and noise pollution will occur; areas which are currently unroaded will be developed and the natural conditions of the forest will be affected; and, the economic base of the local area will be somewhat broadened with a wider variety of revenue sources and employment opportunities.

EIS-MT-73-1693-D/GA PC$23.50
Geological Survey, Washington, D.C.
PROPOSED PLAN OF MINING AND RECLAMATION BIG SKY MINE, PEABODY COAL COMPANY, COAL LEASE M-15965, COLSTRIP, MONTANA.
Draft environmental impact statement.
25 Oct 73, 430p ELR-73-1693, DES-73-64

Descriptors: (*Environmental impact statements, *Strip mining), (*Montana, Environmental impact statements), Land use, Vegetation, Wildlife, Ground water, Surface waters, Economic development, Employment, Land reclamation, Coal deposits.
Identifiers: Revegetation, Rosebud County(Montana).

Approval of a strip mining and reclamation plan, Big Sky Mine, Peabody Coal Lease M-15965, is sought in Rosebud County, Montana. The plan proposes extension of the existing mine into federally owned coal as the initial step in long-term mining that will ultimately encompass much of the 4306.55 acre lease. Coal ownership is checkerboarded with the Federal Government and Burlington Northern, Inc., owning alternate land sections. The land surface is privately owned. Land surface, vegetation, two archeological sites, and aquifers above mined coal beds will be destroyed. Wildlife and habitats will be disrupted until disturbed areas are revegetated and large-scale human intrusions are terminated. Employment in Rosebud County will be increased. Tax and royalty income for Montana and Rosebud County will be increased. Some temporary adverse effects will also occur.

EIS-NB-73-1662-F/GA PC$4.50/MF$1.45
Federal Highway Administration, Lincoln, Nebr. Nebraska Div.
DWIGHT-VALPARAISO HIGHWAY IMPROVEMENT ON NEBRASKA HIGHWAY NO. 66, FROM ITS INTERSECTION WITH DWIGHT SPUR S-12D, IN BUTLER COUNTY, NEBRASKA.
Final environmental impact statement.
17 Oct 73, 48p FHWA-NEB-EIS-73-01-F ELR-73-1662
Supersedes report No. EIS-NB-73-0094-D.
Prepared by Nebraska State Dept. of Roads.

Descriptors: (*Environmental impact statements, *Highways), (*Nebraska, Environmental impact statements), Construction, Right of way acquisition, Public utilities, Traffic engineering.
Identifiers: Nebraska route 66, Butler County(Nebraska), Saunders County(Nebraska).

The proposed improvement represents about 10 miles of highway construction beginning at the intersection of Nebraska Highway No. 66 and Dwight Spur S-12D, proceeding easterly to a junction with Nebraska Highway N-79 at Valparaiso. The improvement includes the relocation of a segment of Nebraska Highway No. 66 in the vicinity of Valparaiso. Acquisition of new and additional right of way will be required. Some relocation impacts on local wildlife are unavoidable; these effects are believed to be minimal and most will be temporary. Local utility conflicts are possible; these variances will be coordinated and rectified with the company concerned. The project will create an increase in traffic volume which in turn may create an increase in both air and noise pollution levels.

EIS-NC-73-1594-D/GA PC$5.25
Federal Highway Administration, Raleigh, N.C. North Carolina Div.
NC 54, FROM DURHAM-ORANGE COUNTY LINE TO RESEARCH TRIANGLE PARK, PROJECT 8.1409701, FEDERAL AID PROJECT F-43-1(1), DURHAM COUNTY, NORTH CAROLINA.
Draft environmental impact statement.
5 Oct 73, 61p FHWA-NC-EIS-73-08-D ELR-73-1594
Prepared by North Carolina State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*North Carolina, Environmental impact statements), Freeways, Construction, Traffic engineering, Universities, Eminent domain, Relocation.
Identifiers: Durham County(North Carolina), North Carolina route 54.

The North Carolina Division of Highways plans construction of a new four-lane freeway on relocation to replace an outdated segment of NC 54 from the Durham-Orange County Line to existing I-40 in the Research Triangle Park. The length of this project is 7.9 miles and is estimated to cost $17,500,000. This project will complete a long sought goal of providing adequate transportation service between the educational and research facilities of Duke University at Durham, the University of North Carolina at Chapel Hill and North Carolina State University at Raleigh with the Research Triangle Park, a research center of nationwide significance. The major environmental impacts of the project will be the relocation of 27 families, slight siltation of streams during construction and the loss of wildlife habitat resulting from the clearing of woodlands for highway right of way. The major beneficial impacts of the project are associated with improved traffic operation including safer and more efficient operating conditions and improved access between the areas of Chapel Hill, Durham, Raleigh and the Research Triangle Park.

EIS-NC-73-1614-D/GA PC$4.50
Federal Aviation Administration, Washington, D.C. Airports Service.
STANLY COUNTY AIRPORT, ALBEMARLE, NORTH CAROLINA.
Draft environmental impact statement.
11 Oct 73, 46p ELR-73-1614
Revision of report dated Jul 73. Prepared by Stanly County, North Carolina, and Talbert, Cox and Associates, Inc., Charlotte, N.C.

Descriptors: (*Environmental impact statements, *Airports), (*North Carolina, Environmental impact statements), Construction, Runways, Taxiways, Parking facilities, Aviation lighting.
Identifiers: Stanly County Airport, Albemarle(North Carolina), Stanly County(North Carolina).

Stanly County proposes to request federal funds for a project to construct a new public-use airport. The initial construction will result in development of a General Utility airport adequate to accommodate all propeller driven aircraft with gross weights less than 12,500 pounds. The airport will be open on a 24-hour basis. There will be about 42 acres of tree clearing; slightly increased intermittent noise levels due to operations of single-and twin-engine propeller driven aircraft; slight increase in air pollution due to aircraft operations; and short-term, adverse environmental conditions associated with normal construction techniques.

EIS-NC-73-1649-F/GA PC$5.00/MF$1.45
Federal Aviation Administration, Washington, D.C. Airports Service.
RUTHERFORD COUNTY AIRPORT, RUTHERFORD COUNTY, NORTH CAROLINA.
Final environmental impact statement.
16 Oct 73, 57p ELR-73-1649
Supersedes report No. EIS-NC-73-0971-D.

Descriptors: (*Environmental impact statements, *Airports), (*North Carolina, Environmental impact statements), Land acquisition, Runways, Taxiways, Eminent domain.
Identifiers: Rutherford County Airport, Rutherford County(North Carolina).

The project proposes land acquisition (approximately 162 acres with relocation of three houses and two mobile homes); construction and lighting of a runway with connecting taxiway and apron; and an access road. The proposed work will result in the development of a general aviation airport which will accomodate substantially all propeller aircraft of less than 12,500 pounds. There will be slightly increased intermittent noise levels and a slight increase in air pollution due to aircraft operations. There will be minor short-term adverse effects normally associated with construction.

EIS-ND-73-1587-D-1/GA PC$5.00
Rural Electrification Administration, Washington, D.C.
UNDERWOOD GENERATING STATION (NEW), UNITS 1 AND 2 AND RELATED TRANSMISSION LINES.
Draft environmental impact statement.
4 Oct 73, 60p USDA-REA-ES(ADM)-73-10-D-1 ELR-73-1587-1
Prepared by Cooperative Power Association, Minneapolis, Minn., and United Power Assoc., Elk River, Minn. See also EIS-73-1587-D-2.

Descriptors: (*Environmental impact statements, *Transmission lines), (*North Dakota, Environmental impact statements), Construction, Electric power generation, Electric substations, Cooling water, Missouri River, Agriculture.
Identifiers: Underwood(North Dakota), McLean County(North Dakota).

The project proposes a new generating station near Underwood, North Dakota, including two 450 MW (nameplate) steam generating units. The generating station will be located in McLean County and will also affect Oliver and Mercer Counties in North Dakota. The project also includes 409 miles of 450 kV Bi-Polar DC transmission line, 83 miles of 345 kV AC and 12.5 miles of 230 kV AC transmission lines. Environmental impacts are discussed.

EIS-ND-73-1587-D-2/GA PC$12.50
Rural Electrification Administration, Washington, D.C.
REPORT ON THE ENVIRONMENTAL ANALYSIS FOR A NORTH DAKOTA POWER SUPPLY PROJECT.
Draft environmental impact statement.
4 Oct 73, 208p ELR-73-1587-D-2
Prepared by Cooperative Power Assn., Minneapolis, Minn., United Power Assn., Elk River, Minn., and Burns and McDonnell, Kansas City, Mo. See also EIS-ND-73-1587-D-3.

Descriptors: (*Environmental impact statements, *Electric power plants), (*North Dakota, Environmental impact statements), Construction, Electric power generation, Electric substations, Cooling water, Missouri River, Agriculture.
Identifiers: Underwood(North Dakota).

The proposed project is to be constructed jointly by two REA financed generation and transmission cooperatives. These cooperatives are: Cooperative Power Association, Minneapolis, Minnesota and the United Powere Association, Elk River, Minnesota. The proposed project would consist of two 486 megawatt generating units and some 400 miles of transmission line. Fuel will be furnished by North American Coal Corporation from their mine fields located north of the project site. Water supplies for cooling and other uses will be taken from the Missouri River below Garrison Dam. The proposed plant to be located at the Underwood site will be a lignite-fired steam-electric generating plant with two units, each having a capability of 486,000 kilowatts. The proposed construction schedule provides for commercial operation of the first unit by late 1978, and the second unit in 1979. Adverse environmental impacts and beneficial effects are discussed in detail.

EIS-ND-73-1587-D-3/GA PC$12.50
Rural Electrification Administration, Washington, D.C.
ENVIRONMENTAL ANALYSIS REPORT, UNDERWOOD-DEAN LAKE 450 KV DC TRANSMISSION LINE FOR COOPERATIVE POWER ASSOCIATION, UNITED POWER ASSOCIATION.
Draft environmental impact statement.
4 Oct 73, 208p ELR-73-1587-D-3
Prepared by Commonwealth Associates, Inc., Burns and McDonnell, Kansas City Mo. See also EIS-ND-73-1587-D-1.

Descriptors: (*Environmental impact statements, *Transmission lines), (*North Dakota, Environmental impact statements), Construction, Electric power generation, Electric substations, Cooling water, Missouri River, Agriculture.
Identifiers: Underwood(North Dakota), McLean County(North Dakota).

Cooperative Power Association and United Power Association have proposed the construction of a 900 megawatt steam electric generating plant approximately five miles south of Underwood, North Dakota. To transport electricity generated at the Underwood Plant to the Minneapolis--St. Paul area, CPA and UPA have proposed the construction of a 450 kV DC transmission line through east central North Dakota and west central Minnesota to a terminal station near Delano, Minnesota. The major benefits of the transmission line will be centered in the CPA and UPA service areas. The energy transmitted by this line will meet load growth in the developing regions of the Minneapolis--St. Paul area and sustain a reliable, efficient power supply for the rural residents in Minnesota. The new transmission line will also improve the power supply and stability of the MAPP pool, and hence the electrical service of the entire north central region. Environmental impacts are discussed.

EIS-ND-73-1619-D/GA PC$5.50
Federal Highway Administration, Bismarck, N. Dak. North Dakota Div.
IMPROVEMENT OF 12TH AVENUE NORTH FROM INTERSTATE 29 EASTERLY TO THE UNIVERSITY DRIVE, 10TH STREET NORTH CORRIDOR IN THE CITY OF FARGO, COUNTY OF CASS, STATE OF NORTH DAKOTA.
Draft environmental impact statement.
11 Oct 73, 69p FHWA-N.D.-EIS-73-04-D ELR-73-1619
Prepared by North Dakota State Highway Dept.

Descriptors: (*Environmental impact statements, *Highways), (*North Dakota, Environmental impact statements), Intersections, Overpasses, Central city, Construction, Eminent domain.
Identifiers: Fargo(North Dakota), Cass County(North Dakota).

The proposed project consists of constructing a 63 foot curb and gutter section from the Interstate 29 interchange easterly to about 29th Street. It also consists of constructing an overhead separation over the two railway lines located between 29th Street and 19th Street. The proposal also includes plans for intersection improvements at 12th Avenue and University Drive and at 12th Avenue and 10th Street. It also includes plans for widening 12th Avenue North between University Drive and 10th Street. The proposed project will enhance the quality of traveling for motorists in the northwest part of the City of Fargo by providing a safe and efficient facility between Interstate 29 and the University Drive - 10th Street Corridor. This improvement also includes the provisions for complete separation of both vehicular and pedestrian traffic from both railway lines. The improvement also includes the provisions for an improved connection between 12th Avenue North and Great Northern Drive which will provide improved access between the northwest part of Fargo and the Central Business District. This project will require the acquisition of one business establishment. There will also be an increase in noise caused by increased traffic volumes on portions of this project.

EIS-ND-73-1680-D/GA PC$5.50
Federal Highway Administration, Bismarck, N. Dak. North Dakota Div.
PROPOSED U.S. 83 WEST BYPASS OF THE CITY OF MINOT IN WARD COUNTY, NORTH DAKOTA. PROJECT F-4-083(02)902 .
Draft environmental impact statement.
23 Oct 73, 68p FHWA-ND-EIS-73-03-D ELR-73-1680
Prepared by North Dakota State Highway Dept.

Descriptors: (*Environmental impact statements, *Highways), (*North Dakota, Environmental impact statements), Construction, Urban areas, Bypasses, Traffic engineering.
Identifiers: Ward County(North Dakota), Minot(North Dakota), U.S. Highway 83.

The project consists of acquiring the right of way and constructing a hard surfaced roadway to bypass the city of Minot, North Dakota. The improvement is about 5 miles long. This project will eliminate the need for through traffic to travel through the congested downtown traffic. There will be some adverse environmental effects due to routing traffic through an area that is presently undeveloped.

EIS-NV-73-1585-F/GA PC$6.00/MF$1.45
Bureau of Reclamation, Sacramento, Calif. Mid-Pacific Regional Office.
MARBLE BLUFF DAM AND PYRAMID LAKE FISHWAY, WASHOE PROJECT, NEVADA.
Final environmental impact statement.
4 Oct 73, 78p ELR-73-1585, FES-73-55
Supersedes Report No. EIS-NV-73-0964-D.

Descriptors: (*Environmental impact statements, *Dams), (*Nevada, Environmental impact statements), Fishways, Construction, Soil erosion, Farms, Economic development, Pyramid Lake.
Identifiers: Marble Bluff Dam.

Construction and operation of a dam, a fishway, and related fish handling facilities near the terminus of the Truckee River in the Pyramid Lake Indian Reservation of western Nevada is planned. The dam will reduce river headcutting in the lower Truckee River channel and thus prevent continued extensive erosion of adjacent farmlands. It will also serve as a heading for the fishway and related facilities which will help to restore Pyramid Lake fishery by reestablishing spawning in the Truckee River. Construction is scheduled to begin in the second quarter of F.Y. 1974 and be completed in F.Y. 1976. A summary of environmental impact and adverse environmental effects is given. The project's chief environmental impact will be the improvement of Pyramid Lake as a fishery, and the preservation of Indian agricultural lands and homesites along the lower Truckee River. This will enhance the economic stability of the Pyramid Lake Indian Reservation and the resident Paiute Tribe.

EIS-NY-73-1581-D/GA PC$3.00
Army Engineer District, New York.
FLOOD CONTROL PLANS, WALLKILL RIVER, NEW YORK (BLACK DIRT AREA).
Draft environmental impact statement.
3 Oct 73, 12p ELR-73-1581

Descriptors: (*Environmental impact statements, *Flood control), (*New York, Environmental impact statements), Farms, Protection, Channel improvements.
Identifiers: Orange County(New York).

The project proposed flood control in the Black Dirt Area of the Wallkill River to reduce flood damages to farming. Environmental impacts include: Reduction of flood damages, resulting in enhancement of the economy of the region; modifications to streams, removal of trees lining the channels and their banks and alteration of the aquatic environment. Adverse environmental effects include: Temporary turbidity during construction would adversely affect the water quality; the removal of fallen trees and excavation and lining of the channel would reduce the value of the streams for aquatic life; there would also be an aesthetic loss due to the clearing of channel obstructing trees; some farmland would be taken out of production.

EIS-NY-73-1599-D/GA PC$3.00
Army Engineer District, New York.
FLOOD CONTROL PROJECT, SAW MILL RIVER, YONKERS, NEW YORK.
Draft environmental impact statement.
10 Oct 73, 15p ELR-73-1599

Descriptors: (*Environmental impact statements, *Flood control), (*New York, Environmental impact statements), Channel improvements, Dams, Flood plains, Saw Mill River.
Identifiers: Yonkers(New York), Westchester County(New York).

The flood protection project consists of an upstream diversion tunnel discharging into the Hudson River, 2,600 feet of channel modification, and a check dam structure to regulate flood flow. Environmental impacts include: Protection of industrial, commercial and residential areas from flooding within the flood plain, and acceleration of further development in the flood plain. The plan of improvement would necessitate the removal of vegetation in the project area and encourage further development in the newly protected flood plain.

EIS-NY-73-1655-F/GA PC$12.75/MF$1.45
Federal Highway Administration, Albany, N.Y. New York Div.
SOUTHERN TIER EXPRESSWAY, CORNING AREA, STEUBEN COUNTY.
Final environmental impact statement.
17 Oct 73, 215p FHWA-NYS-EIS-72-13-F ELR-73-1655
Supersedes report No. EIS-NY-73-0361-D.
Prepared by New York State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*New York, Environmental impact statements), Construction, Limited access highways, Interstate transportation, Community development, Traffic engineering, Eminent domain.
Identifiers: Corning(New York), Steuben County(New York), Southern Tier Expressway.

The statement has been prepared for the section of the Southern Tier Expressway in the area of the City of Corning, Steuben County, New York, generally from N.Y. Route 415 west of Painted Post to N.Y. Route 352 near East Corning. The Southern Tier Expressway, when completed, will link Interstate Route 90 near Erie, PA, with Interstate Route 81 at Binghamton, N.Y. The project under consideration has an approximate length of 8.7 miles, and will link completed sections of the Expressway on the east and west. Stream crossings and stream bank modifications will be necessary, with the attendant possibilities of pollution during construction. The Southern Tier Expressway, one link in the Appalachian Development Highway System, will increase the rate of development of the area. It is estimated that approximately seventy-two families will be displaced.

EIS-NY-73-1665-D/GA PC$29.50
Directorate of Licensing (AEC), Washington, D.C.
OPERATION OF INDIAN POINT NUCLEAR GENERATING PLANT UNIT NO. 3. CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., DOCKET NO. 50-286.
Draft environmental impact statement.
18 Oct 73, 350p ELR-73-1665

Descriptors: (*Environmental impact statements, *Nuclear power plants), (*New York, Environmental impact statements), Pressurized water reactors, Turbogenerators, Cooling systems, Cooling water, Hudson River, Radiation hazards, Radioactive contaminants, Radioactive wastes, Radiation effects.
Identifiers: Indian Point power reactor, Buchanan(New York), Westchester County(New York), Thermal pollution.

The project proposes the issuance of a license to Consolidated Edison Company of New York, Inc., for the operation of the Indian Point Nuclear Generating Plant, Unit No. 3 (Docket No. 50-286), located in the State of New York, Westchester County, Village of Buchanan, 24 miles north of the New York City boundary line. The Indian Point Station will have three Units, with each employing a pressurized water reactor to produce a total of 6,675 megawatts thermal (MWt). Indian Point Unit No. 3 will produce up to 3,025 MWt. A steam turbine-generator will use this heat to provide 965 net megawatts of electrical power (MWe). A design power level of 3,216 MWt (1,033 MWe) is anticipated at a future date and is considered in the assessments in the Statement. Just north of Unit No. 3 is Indian Point Unit No. 1 (Docket No. 50-3), which will produce 890 MTt (net 265 MWe) and Unit No. 2 (Docket No. 50-247), which will yield 2,758 MWt (net 873 MWe). The exhaust steam from each Unit will be condensed by once-through cooling water withdrawn from the Hudson River through separate intakes and discharged into the river via a common discharge canal and submerged multiport outfall structure. Environmental impacts and adverse effects are discussed.

EIS-OK-73-1588-F/GA PC$5.00/MF$1.45
Federal Highway Administration, Oklahoma City, Okla. Oklahoma Div.
SOONER FREEWAY, FROM TECUMSEH ROAD SOUTHERLY 14.5 MILES TO INTERSTATE HIGHWAY 35 NORTHWEST OF PURCELL IN CLEVELAND AND MCCLAIN COUNTIES.
Final environmental impact statement.
4 Oct 73, 56p FHWA-OK-EIS-72-03-F ELR-73-1588
Supersedes report No. EIS-OK-72-4727-D.
Prepared by Oklahoma State Dept. of Highways.

Descriptors: (*Environmental impact statements, *Highways), (*Oklahoma, Environmental impact statements), Development, Eminent domain, Land use, Traffic engineering, Environmental engineering, Economic development.
Identifiers: Cleveland County(Oklahoma), McClain County(Oklahoma).

The proposed highway section consists of developing a segment of Sooner Freeway from Tecumseh Road in Cleveland County southerly 14.5 miles to Interstate Highway 35 about 2.5 miles northwest of Purcell in McClain County. Impacts include the following: Displacement of people and businesses and reduction of native pasture land by approximately 700 acres; increased access and a reduction of congestion, air and noise pollution along existing facilities; increased land values and economic benefits.

EIS-OK-73-1641-D/GA PC$7.50
Department of the Navy, Washington, D.C.
MODERNIZATION OF PLANT 'A' AT NAVAL AMMUNITION DEPOT, MCALESTER, OKLAHOMA.
Draft environmental impact statement.
15 Oct 73, 106p ELR-73-1641

Descriptors: (*Environmental impact statements, *Military deposits), (*Oklahoma, Environmental impact statements), Ammunition, Bombs(Ordnance), Waste disposal, Waste water, Waste treatment, Air pollution.
Identifiers: McAlester(Oklahoma), Pittsburg County(Oklahoma).

An inactive bomb loading plant at the Naval Ammunition Depot, McAlester, Oklahoma is proposed for modernization and reactivation. The new plant will provide a greater bomb loading capacity using fewer production personnel. When the new loading plant is activated, an older loading plant now in operation will be deactivated. Existing buildings, roads, utilities, and services will be used in the proposed action. Traffic patterns will be changed from the older plant to the new one. In-

dustrial waste water generated at the new plant will be treated in an industrial water treatment plant or in a concrete lined oxidation ditch - whichever is more feasible. Equipment design will reduce air pollution and noise pollution to acceptable levels. The impact on the environment will be minimal and there will be no long term adverse effects.

EIS-OK-73-1691-D/GA PC$14.25
Army Engineer District, Tulsa, Okla.
HUGO LAKE KIAMICHI RIVER, OKLAHOMA.
Draft environmental impact statement.
24 Oct 73, 242p ELR-73-1691

Descriptors: (*Environmental impact statements, *Multiple purpose reservoirs), (*Oklahoma, Environmental impact statements), Flood control, Water supply, Water quality, Recreational facilities, Fishes, Wildlife, Kiamichi River, Hugo Lake, Land use, Relocation.
Identifiers: Choctaw County(Oklahoma).

Construction and operation of Hugo Lake, Oklahoma is proposed. The project is located in Choctaw County just west of the town of Sawyer, Oklahoma, on the Kiamichi River at river mile 17.6. The action consists of construction and operation of a lake for flood control, water supply, water quality control, recreation, and fish and wildlife management. Construction was 74% complete as of 1 January 1973. Completion of the proposed project will significantly reduce annual flood damages and will provide for water supply, water quality control, recreation, and fish and wildlife management. The conservation pool will permanently inundate 13,250 acres of land, including approximately 35 miles of Kiamichi River. This land and stream provided habitat for fish and wildlife. An additional 21,240 acres will be periodically inundated during flood time. The project has displaced 68 families.

EIS-OR-73-1637-D/GA PC$13.25
Forest Service, Portland, Oreg. Pacific Northwest Region.
VEGETATION MANAGEMENT WITH HERBICIDES ON THE SISKIYOU, SIUSLAW AND UMPQUA NATIONAL FORESTS, OREGON, CALENDAR YEAR 1974-1975.
Draft environmental impact statement.
15 Oct 73, 222p USDA-FS-DES(Adm)-74-35 ELR-73-1637

Descriptors: (*Environmental impact statements, *Herbicides), (*Oregon, Environmental impact statements), Vegetation, Management, California, Reforestation.
Identifiers: Umpqua National Forest, D 2-4 herbicide, T 2-4-5 herbicide, Atrazine, Picloram, Amitrole, Dicamba.

The action covered by this environmental statement involves the use of herbicides 2,4-D, 2,4,5-T, 2,4,5-TP, Amitrole-T, Atrazine, Picloram, and Dicamba to reduce the competition from native vegetation where it hampers forest management activities. The zone lies in two states; Oregon and California; and in thirteen Counties, namely: Benton, Coos, Curry, Douglas, Jackson, Josephine, Lane, Lincoln, Polk, Tillamook, and Yamhill in Oregon, also Del Norte and Siskiyou in California. The herbicides are used in reforestation site preparation, release of conifers, right-of-way maintenance, maintenance of physical facilities, range improvement work, thinning and weeding of conifer plantations. Environmental impacts and adverse environmental effects are discussed.

EIS-OR-73-1660-F/GA PC$4.75/MF$1.45
Federal Highway Administration, Salem, Oreg. Oregon Div.
SE 89TH AVE. TO SE 106TH AVE., FOSTER/WOODSTOCK COUPLET, MULTNOMAH COUNTY, PORTLAND, OREGON.
Final environmental impact statement.
17 Oct 73, 54p FHWA-OR-EIS-73-06-F ELR-73-1660
Supersedes report No. EIS-OR-73-0830-D. Prepared by City of Portland, Oregon Office of the City Engineer, and Oregon State Highway Div.

Descriptors: (*Environmental impact statements, *Highways), (*Oregon, Environmental impact statements), Construction, Central city, Traffic engineering, Eminent domain.
Identifiers: Forster Rd, Woodstock Blvd, Portland(Oregon), Multnomah County(Oregon).

The proposed project will create a one-way couplet using S.E. Foster Rd. and S.E. Woodstock Blvd. from S.E. 89th Avenue to S.E. Henry Street. Two new connecting roads will be constructed, one near S.E. 90th Avenue, and the other near S.E. Henry Street. The two-way section of Foster Road will be widened from Henry Street to a point near 106th Avenue. S.E. 92nd Avenue will be widened from Foster Road to Woodstock Blvd. Storm sewers will be installed along Foster Road and Woodstock Blvd. The probable environmental impacts of this project are: Improved vehicular mobility; seven homes and three businesses will be acquired; several partial acquisitions will also be made; land use of the residential property fronting Woodstock Blvd. and the new connectors can be expected to change to commercial or industrial; improved pedestrian mobility; there are no known archeological or historical sites near the pro-project.

EIS-PA-73-1582-D/GA PC$13.75
Urban Mass Transportation Administration, Washington, D.C.
CENTER CITY COMMUTER RAIL CONNECTION, CITY OF PHILADELPHIA, PROJECT PA-03-0013.
Draft environmental impact statement.
3 Oct 73, 233p ELR-73-1582

Descriptors: (*Environmental impact statements, *Railroad tunnels), (*Pennsylvania, Environmental impact statements), Viaducts, Construction, Central City, Traffic engineering, Mass transportation.
Identifiers: Philadelphia(Pennsylvania).

The project proposes to construct 1.7 mile combined tunnel and viaduct rail connection between the Reading and Penn Central commuter rail systems in downtown Philadelphia. The project affects the section from North 15th Street and JFK Boulevard east along Filbert Street to North 9th Street and then north to East Poplar and North 8th Streets. A summary of environmental impact and adverse effects is given.

EIS-PA-73-1618-D/GA PC$7.00
National Park Service, Philadelphia, Pa. Northeast Region.
PROPOSED INDEPENDENCE NATIONAL HISTORICAL PARK, AREA F.
Draft environmental impact statement.
11 Oct 73, 96p ELR-73-1618, DES-73-61

Descriptors: (*Environmental impact statements, National parks), (*Pennsylvania, Environmental impact statements), Central city, Architecture, History, Preservation, Renovation.
Identifiers: Independence National Historical Park, Philadelphia(Pennsylvania).

The proposed amendment authorizes Federal acquisition of 1.348 acres of land in Philadelphia. It further authorizes the Secretary of the Interior to enter into an agreement with the city of Philadelphia to develop a public parking facility on the acquired property. Environmental impacts and adverse environmental effects include: The probability that the visual and architectural character of the Old City Historic District can be retained; demolition of six 19th Century structures; acquisition of 1.026 acres of private property; removal of approximately $8,000 from city tax rolls; provision of 550 parking spaces will alleviate a tight parking situation and facilitate visitor use; concentration of vehicular traffic, resulting in higher noise and pollution locals.

EIS-PA-73-1632-F/GA PC$7.75/MF$1.45
Department of Housing and Urban Development, Scranton, Pa. Community Development Disaster Recovery Office.
KINGSTON DISASTER URBAN RENEWAL PROJECT, BOROUGH OF KINGSTON, LUZERNE COUNTY, PENNSYLVANIA, HUD PROJECT NO. R-615C.
Final environmental impact statement.
12 Oct 73, 113p HUD-R03-EIS-73-17-F ELR-73-1632
Supersedes report No. EIS-PA-73-1087-D.

Descriptors: (*Environmental impact statements, *Urban renewal), (*Pennsylvania, Environmental impact statements), Hurricanes, Floods, Residential buildings, Hazards, Facilities, Services, Rehabilitation, Commercial buildings, Streets, Public health, Traffic engineering.
Identifiers: *Disaster areas, Kingston(Pennsylvania).

The Kingston urban renewal project is a disaster area caused by hurricane Agnes in June 1972. Primary objectives of the project are to remove flood damaged and structurally substandard structures, restore public facilities and services such as street repair, and storm and sewage drainage, rehabilitate flood damaged residential dwellings and commercial properties, and realign certain streets to discourage use of residential streets as thoroughfares. The project will have a very positive long term impact on the environment. No important adverse effects are expected.

EIS-PA-73-1633-F/GA PC$9.50/MF$1.45
Department of Housing and Urban Development, Scranton, Pa. Community Development Disaster Recovery Office.
PENN-SUSQUEHANNA URBAN RENEWAL PROJECT, HARRISBURG, PENNSYLVANIA, HUD PROJECT NO. R-634C.
Final environmental impact statement.
12 Oct 73, 148p HUD-R03-EIS-73-15-F ELR-73-1633
Supersedes report No. EIS-PA-73-1083-D.

Descriptors: (*Environmental impact statements, *Urban renewal), (*Pennsylvania, Environmental impact statements), Land acquisition, Clearing, Construction, Improvement, Streets, Parking facilities, Flood plains, Land use, Regulations, Rehabilitation, Structures.
Identifiers: Harrisburg(Pennsylvania).

The statement involves the approval and funding of an urban renewal program in Harrisburg, Pennsylvania. The project will be administered by the Redevelopment Authority of Harrisburg and the activities that will be carried out are enumerated. There are no major items of an adverse nature that would preclude the approval of the plan as represented in the draft EIS.

EIS-PA-73-1650-F-1/GA PC$4.75/MF$1.45
Federal Aviation Administration, Washington, D.C. Airports Service.
GREATER PITTSBURGH INTERNATIONAL AIRPORT, PITTSBURGH, PENNSYLVANIA. BOOK I. INTRODUCTION. APPENDIX A.
Final environmental impact statement.
16 Oct 73, 53p EIS-73-AEA-05-Bk-1 ELR-73-1650-F-1
Supersedes report No. EIS-PA-72-5720-D. See also EIS-PA-73-1650-F-2.

Descriptors: (*Environmental impact statements, *Airports), (*Pennsylvania, Environmental impact statements), Construction, Runways, Taxiways, Terminal facilities, Improvement.
Identifiers: Greater Pittsburgh International Airport, Pittsburgh(Pennsylvania).

It is proposed to construct a new runway; extend runway 32; construct a new access taxiway; construct a new air carrier terminal; and make overall improvements of the Greater Pittsburgh International Airport at Pittsburgh, PA. Effects include an improved airport capacity with decrease in noise and air pollution at ultimate time period.

EIS-PA-73-1650-F-2/GA PC$5.50/MF$1.45
Federal Aviation Administration, Washington, D.C. Airports Service.
GREATER PITTSBURGH INTERNATIONAL AIRPORT. BOOK II. APPENDIX B. APPENDIX C (PART 1).
Final environmental impact statement.
16 Oct 73, 68p EIS-73-AEA-05-Bk-2 ELR-73-1650-F-2
Supersedes report No. EIS-PA-72-5720-D. See also EIS-73-PA-1650-F-3.

Descriptors: (*Environmental impact statements, *Airports), (*Pennsylvania, Environmental impact statements), Reviews, Opinions, Organizations.
Identifiers: Greater Pittsburgh International Airport, Pittsburgh(Pennsylvania).

Volume 2 of the draft environmental impact statement for the Greater Pittsburgh International Airport at Pittsburgh, PA contains comments and questions raised during the coordination and review of the statement.

EIS-PA-73-1650-F-3/GA PC$5.50/MF$1.45
Federal Aviation Administration, Washington, D.C. Airports Service.
GREATER PITTSBURGH INTERNATIONAL AIRPORT. BOOK III. APPENDIX C (PART 2). APPENDIX D.
Final environmental impact statement.
16 Oct 73, 67p EIS-73-AEA-05-Bk-3 ELR-73-1650-F-3
Supersedes report No. EIS-PA-72-5720-D. See also EIS-73-PA-1650-F-2.

Descriptors: (*Environmental impact statements, *Airports), (*Pennsylvania, Environmental impact statements), Opinions, Responses, Information, Objectives, Statistical data, Flight paths, Runways, Wind(Meteorology), Terminal air traffic control.
Identifiers: Greater Pittsburgh International Airport, Pittsburgh(Pennsylvania).

Volume 3 of a three volume environmental impact statement contains a response to state agency comments on the draft environmental impact statement for the Greater Pittsburgh International Airport.

EIS-PA-73-1687-D/GA PC$12.50
Army Engineer District, Baltimore, Md.
WYOMING VALLEY FLOOD CONTROL SUSQUEHANNA RIVER, PENNSYLVANIA.
Draft environmental impact statement. (Revised).
24 Oct 73, 209p ELR-73-1687
Supersedes report dated Jul 73, EIS-PA-73-1173-D.

Descriptors: (*Environmental impact statements, *Levees), (*Pennsylvania, Environmental impact statements), Flood control, Construction, Drainage, Land acquisition, Embankments, Wildlife, Susquehanna River.
Identifiers: Luzerne County(Pennsylvania).

The recommended flood control project is a modification of the existing flood control features in the Wyoming Valley of Luzerne County, Pennsylvania. Basic elements of the improvements consist of raising approximately 64,000 linear feet of levees and steel sheet pile wall to varying heights dictated by the requirement that adequate flood protection constitutes levee raising to the June 1972 Hurricane 'Agnes' flood height. Exact height increases and the type of construction to be used will be determined during the project preliminary design phase. Height increases will be obtained by either placing additional fill material on top of existing levees and expanding the levee toe to the landside or riverside, or in both directions; or through sheet pile construction. Environmental impacts are discussed.

EIS-PA-73-1694-F/GA PC$3.00/MF$1.45
Army Engineer District, Pittsburgh, Pa.
REPLACEMENT OF LOCK AND DAM 7 AND LOCK 8, MONONGAHELA RIVER, PENNSYLVANIA.
Final environmental impact statement.
Oct 73, 19p ELR-73-1694
Supersedes report No. PB-208 297-D.

Descriptors: (*Environmental impact statements, *Channel improvements), (*Pennsylvania, Environmental impact statements), Locks(Waterways), Dams, Monongahela River, Dredging, Turbidity, Navigation.
Identifiers: Fayette County(Pennsylvania), Greene County(Pennsylvania).

The proposal concerns modernization by complete replacement of existing river navigation facilities at Lock and Dam 7 and Lock 8, Monongahela River, Fayette and Greene Counties, Pa. Selected replacement site for Lock and Dam 7 will result in pool level increase of 15 feet, extending 2.8 miles from River Mile 82.2 to 85.0. Improvement of navigation facilities will provide measures and incentives for continuation of growth in development and expansion of waterway user industries. This is an established, urgent necessity for maintaining and increasing regional economic development by structural measures to satisfy projected future commercial navigation uses. Dredging effects related to construction activities probably will result in increased turbidity and sediment deposition for a relatively short river reach downstream of the project facility.

EIS-RI-73-1663-F/GA PC$10.75/MF$1.45
Corps of Engineers, Waltham, Mass. New England Div.
PROVIDENCE RIVER AND HARBOR, RHODE ISLAND.
Final environmental impact statement.
17 Oct 73, 173p ELR-73-1663
Supersedes report No. EIS-RI-73-0937-D.

Descriptors: (*Environmental impact statements, *Channel improvements), (*Rhode Island, Environmental impact statements), Dredging, Harbors, Navigation, Spoil, Benthos, Turbidity, Providence River.

The proposal concerns a navigation improvement project to remove shoals in the Providence River in areas opposite Fuller Rock Light, near the western limit of the channel, adjacent to Pomham Beacon, and an extensive area virtually the entire width of the channel from a point 1200 feet to 6500 feet southeast Conimicut Light. The action is part of the Providence River project to deepen the navigation project from 35 to 40 feet. Environmental impacts are: navigation safety; economics; ocean disposal; turbidity; and disruption of benthic communities.

EIS-SC-73-1635-D/GA PC$3.00
Federal Highway Administration, Columbia, S.C. South Carolina Div.
PROPOSED MULTILANE WIDENING OF A SECTION OF U.S. ROUTE 521 IN LANCASTER COUNTY, SOUTH CAROLINA.
Draft environmental impact statement.
17 Oct 73, 12p FHWA-SC-EIS-73-11-D ELR-73-1635
Prepared by South Carolina State Highway Dept.

Descriptors: (*Environmental impact statements, *Highways), (*South Carolina, Environmental impact statements), Construction, Eminent domain, Relocation, Traffic engineering.
Identifiers: US highway 521, Lancaster County(North Carolina).

The project involves multilane widening of U.S. Rte. 521 in Lancaster County from S.C. Rte. 5 junction to North Carolina State Line, a distance of approximately 13 miles. Environmental impacts include: Temporary inconvenience to area motorists during construction as well as displacement of approximately 10 residences and 1 business; introduction of higher noise levels along the corridor as a result of improved access and higher traffic volumes.

EIS-SC-73-1676-D/GA PC$3.00
Federal Highway Administration, Columbia, S.C. South Carolina Div.
PROPOSED CONSTRUCTION OF THE NORTH-SOUTH FREEWAY SEGMENT EXTENDING FROM NEAR PARK STREET TO MAIN STREET AND THE NORTHEASTERN FREEWAY FROM MAIN STREET TO THE BULL STREET EXTENSION, COLUMBIA, RICHLAND COUNTY, SOUTH CAROLINA.
Draft environmental impact statement.
23 Oct 73, 20p FHWA-SC-EIS-73-09-D ELR-73-1676
Prepared by South Carolina State Highway Dept.

Descriptors: (*Environmental impact statements, *Freeways), (*South Carolina, Environmental impact statements), Construction, Streets, Municipalities, Right of way acquisition, Eminent domain.
Identifiers: Columbia(South Carolina).

It is proposed to construct a new highway facility as part of the primary road System of South Carolina. Social, physical, and environmental factors have been taken into consideration in developing and evaluating advantages or disadvantages of each alternative considered. The project involves the acquisition of right of way which requires the displacement of approximately 40 houses, 17 businesses, and 2 apartments on the north- south freeway segment, and 6 apartments and 1 business on the northeastern freeway segment.

EIS-TN-73-1620-F/GA PC$5.25/MF$1.45
Army Engineer District, Nashville, Tenn.
CORDELL HULL DAM AND RESERVOIR, CUMBERLAND RIVER, TENNESSEE.
Final environmental impact statement.
11 Oct 73, 62p ELR-73-1620
Supersedes report No. PB-208 849-D.

Descriptors: (*Environmental impact statements, *Multiple purpose reservoirs), (*Tennessee, Environmental impact statements), Locks(Waterways), Spillways, Wildlife, Water quality, Fisheries, Navigation, Electric power generation, Cumberland River.
Identifiers: Cordell Hull Dam.

It is proposed to construct a dam, including: An 84 x 400-foot navigation lock; a 100 megawatt power facility; a spillway; and, a 12,209 acre reservoir. The purposes of the project are navigation, hydroelectric power, and recreation. Environmental impacts include conversion of a 72-mile stretch of free-flowing stream to a lake; loss of wildlife habitat; increase in waterfowl and warm-water fishery; relocations of people, utilities, roads, and cemeteries; introduction of new industrial potential; provides hydropower, navigation, and outdoor recreation; cause temporary adverse effects related to air and water quality; and will attract attention to several historical points of interest.

EIS-TN-73-1654-D/GA PC$3.75
Federal Highway Administration, Nashville, Tenn. Tennessee Div.
STATE ROUTE 33, CLAIRBORNE COUNTY, TENNESSEE, FROM THE END OF PROJECT F-033-3(18) AT SANDLICK TO THE BEGINNING OF PROJECT F-033-3(8) WEST OF NEW TAZEWELL.
Draft environmental impact statement.
17 Oct 73, 34p FHWA-TN-EIS-73-1-D ELR-73-1654

Prepared by Tennessee State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Tennessee, Environmental impact statements), Construction, Traffic engineering, Eminent domain, Relocation.
Identifiers: Tennessee route 33, Clairborne County(Tennessee).

The proposed project is on State Route 33, beginning at the end of project F-033-3(18) at Sandick and extending to the beginning of project F-033-3(8) west of New Tazewell, a distance of 3.8 to 4.0 miles depending on which alternate is chosen. The proposed improvement is for the initial construction of a two lane highway, with future construction of a four lane highway. The right-of-way is considered to be 200 feet; however, many places will require additional widths because of steep terrain. The construction of the project will provide benefits in traffic services that will outweigh the minimal adverse effects to the cultural and natural systems of the environment. Several displacements would be necessary along each of the alternates to allow for widening, and eliminating or improving curves and minor changes in grade. The proposed project will provide a more efficient transportation system as well as aid in the exchange of goods and services on the surrounding region. There will also be a significant reduction in traffic congestion along the existing section of State Route 33.

EIS-TN-73-1669-F/GA PC$10.25/MF$1.45
Federal Highway Administration, Nashville, Tenn. Tennessee Div.
ELLINGTON PARKWAY (FEDERAL AID ROUTE 6), FROM TRINITY LANE TO PROPOSED BRILEY PARKWAY, NASHVILLE, TENNESSEE, DAVIDSON COUNTY, NO. U-006-3 (40).
Final environmental impact statement.
18 Oct 73, 163p FHWA-TN-EIS-72-01-F ELR-73-1669
Supersedes PB-206 641-D. Prepared by Tennessee State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Parkways), (*Tennessee, Environmental impact statements), Streets, Construction, Bypasses, Municipalities, Traffic engineering, Eminent domain, Esthetics.
Identifiers: Nashville(Tennessee).

Construction is proposed of a 1.9 mile section of urban four-lane, full access, divided highway, in Nashville, Tennessee. The main beneficial results include: the relief of present and future traffic congestion, since, motorists will be provided with a bypass of local streets having heavy strip commercial development, and filling in of presently undeveloped land resulting in more efficient use of urban space. The principal adverse effects are: the displacement of fifteen residences and some loss of aesthetic quality.

EIS-TX-73-1580-D/GA PC$8.25
Environmental Protection Agency, Dallas, Tex. Office of Grants Coordination.
CONSTRUCTION OF WASTEWATER FACILITIES, SAN ANTONIO RIVER AUTHORITY, BEXAR COUNTY, TEXAS.
Draft environmental impact statement.
3 Oct 73, 124p Impact statement-7311 ELR-73-1580

Descriptors: (*Environmental impact statements, *Waste treatment), (*Texas, Environmental impact statements), Facilities, Construction, Waste water, Sludge disposal.
Identifiers: Bexar County(Texas).

The San Antonio River Authority, which provides sewer service to parts of Bexar and Guadalupe Counties, is proposing to expand and upgrade its existing Salatrillo Creek wastewater treatment facility. The proposed facility will be a 2.5 million gallons per day (MGD) advanced waste treatment plant, to be constructed wholly within the existing 2.54 acre plant site and to incorporate as its main digester the main tank of the existing .5 MGD plant. Sludge disposal will be accomplished by spraying on the 92.24 acre SARA-owned land irrigation site. No interceptor sewers are to be constructed as part of the project. Adverse environmental impacts which cannot be avoided include: An increased sustained flow in the Salatillo Creek below the plant will result from the plant discharge; Operating noise levels at the plant site may increase. However, they are not expected to reach objectionable or nuisance levels.; water Quality in the Site 6-A reservoir located below the plant will initially improve, but may again receive approximately the same nutrient load as it currently receives when the facility is operating at full capacity. Noise, traffic disruption, dust, siltation, and sedimentation associated with construction operations may occur, but will be minimized by using modern construction techniques.

EIS-TX-73-1592-F/GA PC$5.50/MF$1.45
Federal Highway Administration, Austin, Tex. Texas Div.
U.S. HIGHWAY 59 FROM A POINT ON EXISTING U.S. HIGHWAY 59 NEAR LIVINGSTON SOUTH CITY LIMITS, NORTH, NORTHWEST AND NORTHEAST 5.3 MILES TO A POINT ON EXISTING U.S. HIGHWAY 59 NORTH OF THE LIVINGSTON NORTH CITY LIMITS.
Final environmental impact statement.
4 Oct 73, 70p FHWA-TEX-EIS-72-25-F ELR-73-1592
Supersedes report No. EIS-TX-72-5612-D. Prepared by Texas State Highway Dept.

Descriptors: (*Environmental impact statements, *Highways), (*Texas, Environmental impact statements), Construction, Traffic engineering, Community development.
Identifiers: US highway 59, Livingston(Texas), Polk County(Texas).

The proposed U.S. Highway 59 reroute around the west side of the City of Livingston, Texas, consists of a four lane divided highway facility with two way frontage roads on both sides with controlled access extending from a point on existing U.S. Highway 59 near the Livingston South City Limits and extending north, northwest and northeast 5.3 miles to a point on existing U.S. Highway 59 north of the Livingston North City Limits, in Polk County, Texas. Relocation of this main North-South traffic artery through East Texas from its present location through the center of the City of Livingston would provide safer, faster and more efficient flow of traffic and relieve badly congested and hazardous traffic in the City and should result in rapid residential and commercial development along the proposed route around the fringe of the City and aid the local economy. Adverse environmental effects would be negligible.

EIS-TX-73-1679-D/GA PC$4.00
Federal Highway Administration, Austin, Tex. Texas Div.
STATE HIGHWAY 34: FROM 0.5 MILE SOUTH OF U.S. 80, IN TERRELL, TEXAS, TO THE KAUFMAN- HUNT COUNTY LINE, KAUFMAN COUNTY, TEXAS.
Draft environmental impact statement.
23 Oct 73, 39p FHWA-TEX-EIS-73-13-D ELR-73-1679
Prepared by State of Texas Highway Dept.

Descriptors: (*Environmental impact statements, *Highways), (*Texas, Environmental impact statements), Construction, Improvement, Right of way acquisition, Eminent domain, Traffic engineering.
Identifiers: Terrell(Texas), Kaufman County(Texas), Texas Highway 34.

The proposed project on State Highway 34, in Terrell, Texas has been planned to provide for a four lane divided highway through Terrell and the improvement of the existing two lane facility north of Terrell to the Kaufman-Hunt County Line. The length is 9.7 miles with approximately 2.1 miles requiring new location. The development of this project will displace 2 families and 2 businesses.

EIS-UT-73-1611-F/GA PC$9.00/MF$1.45
Canyonlands National Park, Utah.
PROPOSED SQUAW FLAT, CONFLUENCE OVERLOOK ROAD, UTAH.
Final environmental impact statement.
11 Oct 73, 140p ELR-1973-1611, FES-73-57
Supersedes report No. EIS-UT-72-4990-D.

Descriptors: (*Environmental impact statement, *National parks), (*Utah, Environmental impact statements), Construction, Access roads, Natural resources, Wildlife.
Identifiers: Canyonlands National Park, San Juan County(Utah).

The statement involves the construction of approximately 9.7 miles of a relatively low standard paved access road within the Needles District of Canyonlands National Park, San Juan County, Utah. Environmental impacts will include: An increased visitor impact upon the ecosystems from access provided by the low standard paved road; animal road mortality, though minimal, will become more apparent with the increasing number of vehicles; exotic species of plants may be introduced along road shoulders and within the construction zone; road construction will cause some visual impact as a result of minimal cuts and fills, drainage structures and the paved road surface.

EIS-UT-73-1653-F/GA PC$14.75/MF$1.45
Dixie National Forest, Cedar City, Utah.
AQUARIUS LAND USE PLAN.
Final environmental impact statement.
17 Oct 73, 253p ELR-73-1653, USDA-FS-FES(Adm)-74-11
Supersedes report No. EIS-UT-73-1154-D.

Descriptors: (*Environmental impacts statements, *National parks), (*Utah, Environmental impact statements).
Identifiers: Dixie National Forest, Wayne County(Utah), Garfield County(Utah).

The statement identifies and evaluates the probable effects of implementing the proposed land use plan and alternative to this plan for the Aquarius Planning Unit, Dixie National Forest, Utah. The Planning Unit covers an area of 252,000 acres of National Forest land between Escalante, UT on the south and Teasdale, UT on the north. Major land management practices include, but are not limited to timber harvesting, road construction, range management improvements (fencing, water developments, and chaining of pinyon-juniper trees), controlling off-road vehicle use, protection of wilderness resource and watershed improvement. These management practices will affect conditions in Wayne and Garfield Counties. Probable beneficial effects include improvement of forage conditions for domestic livestock and wildlife, stabilization of slopes and stream banks that will reduce sedimentation, and improvement of quality timber stands for future use by putting them under regulated production. Extraction of minerals will be allowed to help relieve energy crisis and maintain or improve present economic situations in local communities adjacent to the planning unit.

EIS-WA-73-1615-F/GA PC$11.00/MF$1.45
Federal Highway Administration, Olympia, Wash. Washington Div.
STATE ROUTE 20, MAZAMA TO WINTHROP, OKANOGAN COUNTY, WASHINGTON.
Final environmental impact statement.
11 Oct 73, 176p FHWA-WN-EIS-71-07-F ELR-73-1615

Revision of report dated Jul 73. Prepared by Washington State Dept. of Highways.

Descriptors: (*Environmental impact statements, *Highways), (*Washington (State), Environmental impact statements), Construction, Traffic engineering, Land use, Sediments, Community development, Access roads, Eminent domain.
Identifiers: Okanogan County (Washington), Washington route 20.

The project includes the construction on new alignment of a 14 mile section of state route 20 in Okanogan County, to relieve existing traffic congestion in and adjacent to the town of Winthrop which has been compounded by the opening of the North Cascades Highway. The expected beneficial and adverse effects are discussed.

EIS-WA-73-1658-D/GA PC$5.00
Federal Aviation Administration, Washington, D.C. Airports Service.
KITSAP COUNTY AIRPORT, BREMERTON, WASHINGTON.
Draft environmental impact statement.
17 Oct 73, 58p ELR-73-1658
Prepared by Reid, Middleton and Associates, Inc., Edmonds, Washington, and Isbill Associates, Inc., Denver, Colo.

Descriptors: (*Environmental impact statements, *Airports), (*Washington(State), Environmental impact statements), Construction, Improvement, Runways, Facilities, Roads, Utilities, Buildings, Land acquisition, Structures.
Identifiers: Kitsap County Airport, Kitsap County(Washington).

The Port of Bremerton, Washington proposes Kitsap County Airport development actions to be accomplished over the next 20 years. Included are short range (to 1976), intermediate range (1976-1981), and long range (1981-1991) constructions. No significant adverse effects are expected.

EIS-WI-73-1607-D/GA PC$14.50
Federal Highway Administration, Madison, Wis. Wisconsin Div.
PROPOSED LOCATION OF A NEW USH 53 FREEWAY AND A NEW USH 8 EXPRESSWAY IN BARRON AND CHIPPEWA COUNTIES, WISCONSIN.
Draft environmental impact statement.
11 Oct 73, 246p FHWA-WISC-EIS-73-13-D ELR-73-1607
Prepared by Wisconsin State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Wisconsin, Environmental impact statements), Construction, Freeways, Limited access highways, Traffic engineering, Right of way acquisition, Commerce, Eminent domain, Improvement.
Identifiers: Barron County(Wisconsin), Chippewa County(Wisconsin), US highway 53, US highway 8.

The statement assesses the effects of the proposed location of a new U. S. Highway 53 freeway and a new U. S. Highway 8 expressway on Barron and Chippewa Counties, Wisconsin. The primary purpose of the improvement is to provide fast, safe and efficient transportation of people and goods in northwestern Wisconsin. The project requires the acquisition of 16 homes, 3 business, and the relocation of 45 persons.

EIS-WI-73-1609-D/GA PC$3.00
Federal Highway Administration, Madison, Wis. Wisconsin Div.
RECONSTRUCTION OF 1.2 MILES OF COUNTY TRUNK HIGHWAY 'K' IN VERNON COUNTY, WISCONSIN.
Draft environmental impact statement.
9 Oct 73, 14p FHWA-WISC-EIS-73-14-D ELR-73-1609
Prepared by Wisconsin State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Wisconsin, Environmental impact statements), Construction, Rural areas, Eminent domain, Right of way acquisition.
Identifiers: Vernon County(Wisconsin).

The project involves reconstruction of 1.2 miles of County Trunk Highway K in Vernon County, Wisconsin. It begins at the north county line and extends southeasterly. Grading, replacing two deficient structures, placing base course and surfacing of the roadbed will be involved. It will be necessary to acquire right of way for minor relocations and to conform to design standards. The project consists of rebuilding an existing corridor and involves two fresh meadow marshland areas, a large spring and two streams. A number of measures are being planned in cooperation with the State Department of Natural Resources to mitigate damages and to protect fish and wildlife interests; however, it will be necessary to acquire approximately six acres of marshy pasture land for road construction purposes. Also, the removal of 20 to 25 trees is expected.

EIS-WI-73-1624-D/GA PC$5.75
Federal Highway Administration, Madison, Wis. Wisconsin Div.
PORTAGE--S.T.H. 54 ROAD, U.S.H. 51, MARQUETTE, WAUSHARA, AND PORTAGE COUNTIES, WISCONSIN.
Draft environmental impact statement.
12 Oct 73, 73p FHWA-WISC-EIS-73-17-D ELR-73-1624
Prepared by Wisconsin State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Wisconsin, Environmental impact statements), Construction, Freeways, Traffic engineering, Eminent domain.
Identifiers: US highway 51, Marquette County(Wisconsin), Waushara County(Wisconsin), Portage County(Wisconsin).

The project proposes expansion to a four lane dual freeway of the existing U.S. Highway 51 from the south county line of Marquette County to the Highway 54 interchange south of Plover, a distance of about 56 miles. The plans are in accordance with the planning and provisions made since the mid-1950's. The purchase of private access and the revision of the local road systems will cause adjustments in local travel patterns. This will be an important safety and efficiency impact for Highway 51 traffic through the elimination of turning movements and slow moving vehicles. The 770 acres of land and 27 buildings acquired for highway purposes will result in a change from their current uses. The remaining existing or planned developments should not be disrupted by the highway. Highway oriented business development will probably occur at the important interchanges. The electric power, telephone, gas and oil facilities located within the proposed project will require adjustments to accommodate the new highway facility. Area, regional and state social, economic, and recreational activities should be enhanced due to the safety, utility, and efficiency of the improved highway.

EIS-WI-73-1626-D/GA PC$13.25
Federal Highway Administration, Madison, Wis. Wisconsin Div.
S.T.H. 59, WEST COUNTY LINE, GENESEE ROAD, PROJECT I.D. 3110-0-00, F 063-1( ), WAUKESHA COUNTY, WISCONSIN.
Draft environmental impact statement.
12 Oct 73, 221p FHWA- WISC-EIS-73-12-D ELR-73-1626
Prepared by Wisconsin State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Wisconsin, Environmental impact statements), Construction, Improvement, Design, Traffic safety, Accident prevention, Eminent domain, Right of way acquisition, Relocation, Decision making.
Identifiers: Waukesha County (Wisconsin).

The purpose of this highway improvement is to correct the out-dated geometric design and corresponding safety deficiencies, thereby reducing the high accident rate which currently exists between the west Waukesha County and the northeast limits of the village of North Prairie. The improvement were to use the existing Highway 59 roadway. State forest lands would be required.

EIS-WI-73-1661-F/GA PC$5.50/MF$1.45
Federal Highway Administration, Madison, Wis. Wisconsin Div.
PROJECT F019-4 ( ) 1474-0-00, WALDO BOULEVARD (CITY OF MANITOWOC) S.T.H. 42 AND U.S.H. 10, MANITOWOC COUNTY, WISCONSIN.
Final environmental impact statement.
17 Oct 73, 66p FHWA-WISC-EIS-73-5-F ELR-73-1661
Supersedes report No. EIS-WI-73-0730-D.
Prepared by Wisconsin Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Wisconsin, Environmental impact statements), Construction, Central city, Traffic engineering, Highway bridges.
Identifiers: Waldo Boulevard, Manitowoc(Wisconsin), Manitowoc County(Wisconsin).

The project is intended to increase the traffic carrying capacity of Waldo Boulevard to handle present day and future traffic volumes safely and efficiently on this regional thoroughfare which at the present time is the only continuous major East-West street extending across the entire city of Manitowoc. The project begins at the junction of 42nd Street and Waldo Boulevard (junction U.S. Highway 141, U.S. Highway 10 and STH 42), extends in a easterly direction along Waldo Boulevard (U.S. Highway 10 and STH 42) approximately 2.6 miles to the junction with Memorial Drive. The lands within the project are highly developed and front on an existing major traffic route. Therefore, the project will have only minimal changes on the existing environment. A bridge will be constructed over the Chicago and North Western Transportation Company tracks as part of this project. It will replace an existing bridge and will be designed in line with today's design practices.

EIS-WI-73-1667-D/GA PC$5.25
Federal Highway Administration, Madison, Wis. Wisconsin Div.
PROPOSED ALIGNMENT FOR THE U.S. HIGHWAY %+ FREEWAY BETWEEN MERRILL IN LINCOLN COUNTY, WISCONSIN, AND C.T. HIGHWAY 'K' IN ONEIDA COUNTY, WISCONSIN.
Draft environmental impact statement.
18 Oct 73, 64p FHWA-WIS-EIS-73-16-D ELR-73-1667
Prepared by Wisconsin State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Freeways), (*Wisconsin, Environmental impact statements), Construction, Traffic safety, Traffic engineering, Improvement.
Identifiers: Oneida County(Wisconsin), Lincoln County(Wisconsin), U.S. Highway 51.

The report covers the proposed alignment for the U.S. Highway 51 freeway between Merrill in Lincoln County, Wisconsin, and C. T. Highway 'K' in Oneida County, Wisconsin. Safety will be increased by developing an improved high type facility to relieve existing facilities which are overcrowded or inadequate. No important adverse effects are expected.

EIS-WI-73-1672-D/GA PC$15.75
Federal Highway Administration, Madison, Wis. Wisconsin Div.
I 57-1(1)8/1220-6-80, MILWAUKEE TO GREEN BAY INTERSTATE HIGHWAY (S.TH.42 TO C.T.H. 'MM' SECTION), SHEBOYGAN, MANITOWOC AND BROWN COUNTIES, WISCONSIN.
Draft environmental impact statement.
23 Oct 73, 273p FHWA-WISC-EIS-73-11-D ELR-73-1672
Prepared by Wisconsin State Dept. of Transportation.

Descriptors: (*Environmental impact statements, *Highways), (*Wisconsin, Environmental impact statements), Freeways, Interstate highway system, Construction, Traffic engineering, Traffic safety, Right of way acquisition, Rural areas.
Identifiers: Milwaukee(Wisconsin), Green Bay(Wisconsin), Interstate Highway 57, Sheboygan County(Wisconsin), Manitowoc County(Wisconsin), Brown County(Wisconsin).

It is proposed to build a freeway between the cities of Milwaukee and Green Bay, Wisconsin, as a part of the national system of interstate and defense highways. The overall positive impact will be to take better advantage of the area's economic opportunities. No significant noise, air or water pollution is indicated. The classic benefits are those of safety and efficiency to the traveling public. Some lands and farmsteads will be removed from production by the highway rights of way.

EIS-WI-73-1695-D/GA PC$5.50
Soil Conservation Service, Washington, D.C.
FIRST CAPITOL WATERSHED, LAFAYETTE AND IOWA COUNTIES, WISCONSIN.
Draft environmental impact statement.
25 Oct 73, 69p USDA-SCS-ES-WS(Adm)-74-19-D ELR-73-1695

Descriptors: (*Environmental impact statements, *Watersheds), (*Wisconsin, Environmental impact statements), Flood control, Fishes, Wildlife, Improvement, Protection, Erosion control, Sediment transport, Recreational facilities, Land use, Dams.
Identifiers: First Capitol watershed, Lafayette County(Wisconsin), Iowa County(Wisconsin).

A project of watershed protection, flood prevention, and fish and wildlife improvement in Lafayette County, Wisconsin, is proposed. The project will reduce the 5.8 ton annual rate of erosion of cropland from 5.8 to 3.5 tons per acre per year. The amount of sediment reaching the Pecatonica River will be reduced. Structural measures will reduce floodwater and sediment damages by 36 to 99 percent on 1,600 acres in the flood plain. Flood damages in the city of Darlington will be reduced. An 18-acre lake will have public access for recreation. The project will create an additonal 5 acres of wetlands. Installation of dams, spillways, and sediment pools will remove about 177 acres of agricultural land from production.

EIS-WV-73-1629-F/GA PC$6.75/MF$1.45
Federal Highway Administration, Charleston, W. Va. West Virginia Div.
PROJECT DP-RF 312(15), RELOCATION OF WVA 2, CROWN CITY TO MASON COUNTY LINE, CABELL COUNTY, WEST VIRGINIA.
Final environmental impact statement.
Sep 73, 91p FHWA-WV-EIS-73-01-F ELR-73-1629
Supersedes report No. EIS-WV-73-0387-D.
Prepared by West Virginia State Dept. of Highways.

Descriptors: (*Environmental impact statements, *Highways), (*West Virginia, Environmental impact statements), Construction, Rural areas, Traffic engineering, Eminent domain, Relocation.
Identifiers: West Virginia route 2, Cabell County(West Virginia).

The project includes approximately 4 miles of construction of two 12 foot lanes beginning 2.1 miles north of an intersection with Cabell County Route 3 and West Virginia Route 2 and terminating .14 miles beyond the Cabell-Mason County Line. The area is in Cabell County near the Crown City Ferry to the Mason County Line. Bridges over the B. and O. and Guyan Creek will also be constructed. An existing bridge over Guyan Creek, approximately 300 feet in length, will be removed. The partially controlled access facility will replace the existing section of West Virginia Route 2 and join existing West Virginia Route 2 at the Mason County Line. Transportation will be made safer, faster and more efficient for both local and through motorists. Minor construction related effects to the environment will be felt. The acquisition of 10 residences will be an adverse impact. Slight increases in air and noise pollution may be temporarily felt throughout the project. There is no property involvement with recreation areas, parks, or wildlife and waterfowl refuges.

EUR-4982/GA PC$10.50/MF$1.45
European Communities, Brussels (Belgium). Commission.
AIR LEAD CONCENTRATIONS IN THE EUROPEAN COMMUNITY. YEARLY REPORT: APRIL 1971--MARCH 1972.
1973, 167p
In German. U.S. Sales Only.

Descriptors: (*Air pollution, *Lead), Abundance, Combustion, Earth atmosphere, Environment, European communities, Gasoline, Monitoring, Motors, United kingdom.

For abstract, see NSA 28 05, number 12550.

N73-29686/5GA PC$3.50/MF$1.45
Institut Royal Meteorologique de Belgique, Brussels.
ATMOSPHERIC POLLUTION, SMOKE AND SULFUR DIOXIDE POLLUTION ATMOSPHERIQUE, FUMEE ET ANHYDRIDE SULFUREUX BULLETIN MENSUEL, JUILLET 1972.
Monthly Bulletin, Jul. 1972.
Jul 72, 28p
Subm-Prepared Jointly with Inst. D'Hyg. Et d'Epidemiol.
In French and Dutch.

Descriptors: *Air pollution, *Belgium, *Smoke, *Sulfur oxides, *Tables (Data), Air sampling, Weather stations.

For abstract, see STAR 1120

N73-29989/3GA PC$5.50/MF$1.45
Mississippi State Univ., State College. Dept. of Civil Engineering.
REMOTE SENSING APPLICATIONS FOR TRANSPORTATION AND TRAFFIC ENGINEERING STUDIES: A REVIEW OF THE LITERATURE.
J. W. Epps. Jun 73, 70p NASA-CR-129011
Contract NAS8-29036

Descriptors: *Remote sensors, *Traffic, *Urban transportation, Management planning, Technology utilization.

For abstract, see STAR 1120

PATENT-3 721 207/GA Not available NTIS
Department of the Navy Washington D C
COLLECTION AND DISPOSAL OF SHIP'S SEWAGE.
Patent,
Charles W. Walker. Filed 15 Apr 71, patented 20 Mar 73, 5p Rept nos. PAT-APPL-134 284,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Sanitary engineering), (*Ships, *Sanitary engineering), Harbors, Disposal, Design, Floats, Storage tanks.
Identifiers: Sewage treatment, Water pollution control, PAT-CL-114-0-5-R.

The patent provides a system for collecting ships' overboard discharges by running the discharges by gravity through a floating pipe and discharging the discharges into a submerged sewage pumping plant or holding station from whence it is pumped into the nearest domestic collection manhole.

PATENT-3 733 265/GA Not available NTIS
Atomic Energy Commission, Washington, D.C.
CROSS-FLOW FILTRATION PROCESS FOR REMOVAL OF TOTAL ORGANIC CARBON AND PHOSPHATES FROM AQUEOUS SEWAGE EFFLUENTS.
Patent,
Kurt A. Kraus, and Harvey A. Mahlman. Filed 22 Nov 71, patented 15 May 73, 7p PAT-APPL-200 840
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 20231 $0.50.

Descriptors: (*Water pollution, Sewage filtration), (*Patents, Sewage filtration), (*Organic wastes, Sewage filtration), (*Organic phosphates, *Sewage filtration), (*Inorganic phosphates, Sewage filtration), Clarification, Sewage treatment.
Identifiers: PAT-CL-210-23, Secondary sewage treatment, Cross flow.

An improved method is provided in the patent for removing the organic and phosphate content of an aqueous feed. It comprises adding an effective amount of a salt which hydrolyzes to a hydrous oxide to said feed and then passing the thus-treated feed tangentially past one face of a porous substrate at a pressure sufficient to produce a clarified filtrate on an opposite face of said substrate.

PATENT-3 760 868/GA Not available NTIS
Department of the Interior, Washington, D.C.
DISPOSAL OF WASTE HEAT.
Patent,
Allen Cywin. Filed 28 Jan 71, patented 25 Sep 73, 4p PAT-APPL-110 430, DOCKET/FWQ-1691
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Industrial water, *Heat recovery), (*Cooling water, Heat recovery), (*Patents, Heat recovery), Water pollution, Abatement, Heating equipment, Communities, Urban areas.
Identifiers: PAT-CL-1651-1, *Thermal pollution, Water pollution abatement.

The patent concerns an invention to utilize a domestic water distribution system and its associated ground mass as a heat sink for waste heat produced by industrial processes to keep it from reaching the environment. Domestic water is used as a cooling medium to absorb waste heat produced by industrial processes. Heated domestic water is then passed to a municipal water distribution system to thereby utilize the distribution system and the surrounding ground mass as a heat sink.

PB-223 620/6GA PC$12.00/MF$1.45
Towne School of Civil and Mechanical Engineering, Philadelphia, Pa.
A FULLY COMPATIBLE ANNULAR SEGMENT FINITE ELEMENT.
Interim rept.,
Sidney Shore, and Charles R. Lansberry. Feb 72, 200p
Contract FH-11-7389
Report on Horizontally Curved Highway Bridges Research Project. Also available as Rept. no.

CURT-T0272 (Consortium of University Research Teams (CURT)).

Descriptors: (*Plates(Structural members), Structural analysis), (*Girder bridges, Stresses), Curved profiles, Bridge decks, Computerized simulation, Stiffness methods, Deflection, Matrix methods, Hermite functions, Computer programs, FORTRAN.
Identifiers: Finite element analysis, FORTRAN 4 programming language.

An annular segment finite element is developed for the displacement method of analysis of thin plates subjected to membrane and/or bending stresses. The form of the element displacement expansion used is such that the element is of the conforming type. The element stiffness and stress matrices are derived for a homogeneous, linearly elastic, cylindrically orthotropic material. The annular segment element has four nodes and forty-eight degrees of freedom, twelve at each node. A computer program, written in Fortran IV, is used to obtain the numerical solutions for stresses and deflections of six sample problems in order to establish the accuracy and convergence of the element. Five classical plate problems and one horizontally curved bridge problem are solved.

PB-223 748/5GA PC$3.00/MF$1.45
Center for California Public Affairs, Claremont.
ENVIRONMENTAL IMPACT REQUIREMENTS IN THE STATES.
Socioeconomic environmental studies series,
Thaddeus C. Tryzna. Jun 73, 26p* W73-14749, EPA-R5-73-024
Contract EPA-68-01-1818

Descriptors: (*Environmental impact statements, Requirements), (*State government, Environmental impact statements), Legislation, Law(Jurisprudence), Summarizing.

The requirements of Environmental Impact Analyses for each of the various states have been surveyed. In eight states and in Puerto Rico, impact statements are a statutory requirement; in four states, they are required by Executive Order. In a few cases, the impact statement requirement extends to local as well as state agencies. (Author)

PB-223 806/1GA PC$5.25/MF$1.45
Transportation Systems Center, Cambridge, Mass.
AIRPORT ACCESS/EGRESS SYSTEMS STUDY. VOLUME I. TEXT.
Final rept. Jul 72-Jun 73,
Edward M. Whitlock, and David B. Sanders. Sep 73, 178p* DOT-TSC-OST-73-32-1
Contract DOT-TSC-462-1
Prepared by Smith (Wilbur), and Associates, New York. See also Volume 2, PB-223 842.

Descriptors: (*Airports, Access roads), (*Access roads, *Urban transportation), Urban planning, Mass transportation, Feasibility, Improvement, Travel, Traffic engineering, Vehicular traffic, Central city, Evaluation.

Studies of airport activities and user characteristics at 34 high volume U. S. airports indicate that disbursed trip origins cannot economically justify rapid transit corridor investments dedicated to airport access travel. Generally, airports have too much off-roadway parking in central terminal areas and this concentration of vehicular activities near terminal building congests internal roadways. The study proposes a number of low-capital improvement concepts to airport access/egress. These improvements are generally directed towards improving the traffic flow in the central terminal area through better flow controls, diversion of automobile traffic from the central terminal area, and changes in travel patterns. The latter can be changes in mode and/or time of travel. Three specific operational experiments are proposed to evaluate the effectiveness of the proposed concepts. The experiments are a remote parking experiment at Detroit Metropolitan Airport, bus-rail links from LaGuardia and Kennedy Airports in New York and evaluation of a garage-baggage handling system at Seattle-Tacoma Airport. Cost of implementing all these experiments is estimated to be $1.444 million.

PB-223 842/6GA PC$6.50/MF$1.45
Transportation Systems Center, Cambridge, Mass.
AIRPORT ACCESS/EGRESS SYSTEMS STUDY. VOLUME II. APPENDIXES.
Final rept. Jul 72-Jun 73,
Edward M. Whitlock, and David B. Sanders. Sep 73, 277p* DOT-TSC-OST-73-32-2
Contract DOT-TSC-462-2
Prepared by Smith (Wilbur), and Associates, New York. See also Volume I, PB-223 806.

Descriptors: (*Airports, Access roads), (*Access roads, *Urban transportation), Urban planning, Mass transportation, Feasibility, Improvement, Travel, Traffic engineering, Vehicular traffic, Central city, Evaluation.

Contents:
Airport survey questionnaire;
Airport description;
Remote parking questionnaire;
Passenger counting record;
On-bus survey questionnaire;
Passenger count record;
Automobile baggage check-in survey forms;
Bibliography.

PB-223 869/9GA PC$3.00/MF$1.45
Maine Univ., Orono. Land and Water Resources Inst.
ANNUAL REPORT OF ACTIVITIES DURING FISCAL YEAR 1973.
Annual rept. no. 9.
Jul 73, 34p W73-14752, OWRR-A-999-ME(10)
See also Annual report no. 8, PB-223 869.

Descriptors: (*Water pollution, *Research), (*Maine, Water pollution), Lakes, Rivers, Sediments, Aquatic biology, Public opinion, Abstracts.

The research projects supported by the Maine Land and Water Resources Institute in FY 1973 reflect concern with water quality. Some of these projects are: Sludge characterization in design and control of sludge dewatering processes; phosphate retention by lake sediments; the effects of burrowing tubificid worms on exchange of phosphorus in lake sediments; removal of colloidal particles by porous media; dissolved pollution product gases in natural waters; political and environmental attitudes related to water quality and management of the Penobscot River; relationships between phytoplankton, limiting nutrients, and sediment-water in selected Maine lakes; the effects of PCB's and selected herbicides on platymonas Subcordiformis and other algae; Maine Salmon River pesticide contamination; septic tank effluent movement through soils; adsorption as a protective mechanism for water-borne viruses; effect of development in the mountainous regions of Maine on water quality.

PB-223 871/5GA PC$3.00/MF$1.45
Indiana Univ., Bloomington. Dept. of Geology.
EFFECTS OF SANITARY LANDFILLS ON GROUND-AND SURFACE-WATER MOVEMENT AND WATER QUALITY,
R. V. Ruhe. 1 Sep 72, 13p W73-14859, OWRR-B-034-IND(1)
Contract DI-14-31-0001-3584

Descriptors: (*Water pollution, *Sanitary landfills), (*Ground water, Sanitary landfills), Topography, Indiana.

Two sanitary landfill areas in Indiana were instrumented and data were collected. The Monroe County Landfill is located along Anderson Road almost 7.7 miles northeast of Bloomington, Indiana on the north valley slope of Beanblossom Creek. Groundwater is sampled in monitoring wells, and surface water is sampled at selected weir sites. The Columbus Indiana Landfill is located at the base of a terrace scarp in the White River Valley. A series of double-level dikes were constructed to contain the fill. Monitoring wells were installed on the terrace, in the fill proper, and around the margin of the fill.

PB-223 873/1GA PC$3.75/MF$1.45
Louisiana State Univ., Baton Rouge. Dept. of Chemical Engineering.
SINGLE-CELL PROTEIN FROM WASTE CELLULOSE.
Final rept.,
C. D. Callihan, and C. E. Dunlap. Oct 73, 89p*
EPA-
Contract PHS-EP-00328
Supersedes PB-221 096.

Descriptors: (*Solid waste disposal, Cellulose), (*Cellulose, *Fermentation), (*Agricultural wastes, *Food processing), (*Bagasse, Solid waste disposal), Proteins, Biodeterioration, Alkalies, Cost estimates, Process variables, Pilot plants, Utilization, Sugar cane, Culture media, Cultures(biology), Bacteria.
Identifiers: Waste recycling, *Food supplements, *High protein supplements, Single cell proteins.

This is the final report of a study that was conducted at Louisiana State University to develop a feasible method for the direct conversion of cellulosic wastes to microbial protein--a single cell protein (SCP) to be used as animal feed supplement. The SCP-from-cellulose process is defined and evaluated. Discussed are substrates used for fermentation; the treatment of cellulosics; the organisms and the inoculum preparation employed in the testing; batch and continuous fermentation; and product harvesting. Economics of the conversion process are analyzed, and flow sheets showing the overall pattern of the process are presented.

PB-223 874/9GA PC$3.00/MF$1.45
Bureau of Mines, Washington, D.C.
DECOMPOSITION OF HYDROGEN SULFIDE IN AN ELECTRICAL DISCHARGE.
Rept. of Investigations,
L. A. Haas, and S. E. Khalafalla. Aug 73, 27p*
BuMines-RI-7780
Prepared in cooperation with Twin Cities Metallurgy Research Center, Minn.

Descriptors: (*Hydrogen sulfide, *Decomposition reactions), Ozonization, Electric discharges, Process variables, Industrial waste treatment, Air pollution, Tests, Reduction(Chemistry), Gas discharges.
Identifiers: Air pollution control.

Hydrogen sulfide is one of the most toxic gases; it is very corrosive and increases equipment deterioration. Recent emphasis has been placed on increasing the H2S removal efficiencies to avoid secondary pollution, regardless of economics. In this study hydrogen sulfide was decomposed to elemental sulfur in an electrical discharge. With helium, nitrogen or argon diluents, a threshold voltage between 1 and 3 kv was required for the decomposition reaction to occur in a laboratory ozonizer. Above threshold voltage, the H2S decomposition rate increased with increasing voltage, but the increase was more pronounced with argon diluent than with either nitrogen or helium. In common with other reactions under electrical discharge, the H2S decomposition decreased with increasing temperature in the range of - 41C to 61C. The reaction did not appear to be rate-controlled by a solid-gas sorption step as introduction of activated charcoal into the electrical discharge zone did not significantly affect the decomposition yield. In the presence of polymeric

chlorofluorocarbon oil, 90 percent conversion of the 3 percent H2S in helium was obtained at 14 kv, 60 Hz, 2 mm electrode gap, and a gas-residence time greater than one minute. Under the same experimental conditions in the absence of oil, the conversion was only about 50 percent. (Modified author abstract)

PB-223 878/0GA PC$4.25/MF$1.45
Chicago Transit Authority, Ill. Research and Planning Div.
MONITOR-CTA. AN URBAN MASS TRANSPORTATION DEMONSTRATION PROJECT STUDY OF AUTOMATIC VEHICLE MONITORING.
Final rept.,
Martin Lukes, and Raymond Shea. May 73, 117p* UMTA-IL-06-0010-73-1
Contract DOT-H-1016

Descriptors: (*Urban transportation, Buses(Vehicles)), (*Buses(Vehicles), Scheduling), Automatic, Control, Optimization, Effectiveness, Voice communication, Warning systems, Computer systems hardware, Maintenance, Evaluation, Illinois.
Identifiers: *Automatic vehicle monitoring, Chicago(Illinois).

The report discusses a monitoring system which was implemented to test the practicability of centralized automatic schedule adherence checking, the effectiveness of a clandestime alarm aboard a transit vehicle and the possibility that such an automated system would allow significant improvement in radio channel utilization. The evaluation was performed by collecting data pertinent to the system's performance (i.e. accuracy and reliability) in specially designed experiments. The results of the evaluation indicate an excellent potential for increased management information. Although the system performance was adversely affected by poor reliability of the initial equipment aboard the buses, it was shown that this system can maintain schedule adherence at least as well as the present methods, accurately locate a vehicle in an emergency and provide the information capacity of twice as many conventional voice radio channels.

PB-223 880/6GA PC$3.50/MF$1.45
Maine Univ., Orono. Dept. of Plant and Soil Sciences.
PHOSPHATE RETENTION BY LAKE SEDIMENTS,
Erik G. Lotse. Jun 73, 66p W73-14751, OWRR-A-016-ME(1)

Descriptors: (*Phosphorus, *Adsorption), (*Lakes, *Sediments), Water pollution, Chemical equilibrium, Inorganic phosphates, Reaction kinetics, Sebasticook Lake, Maine, Calcium fluorides, Chemical removal(Sewage treatment), Desorption.
Identifiers: Eutrophication, *Sediment water interactions.

The report determines the phosphate retention of lake sediments in relationship to their mineralogical and chemical composition and physical properties, the effect of phosphate equilibrium concentration, pH, reaction time, solid to solution ratio and phosphate to sediment ratio on phosphate retention, the different forms of phosphorus in lake sediments, and elucidates the mechanism of phosphate retention using model substances such as pure clay minerals, hydroxides of iron and aluminum, and clay minerals with hydroxy-iron and hydroxy-aluminum interlayers. The findings also include the development of a method for phosphate removal from waste effluents.

PB-223 888/9GA PC$4.25/MF$1.45
Piedmont Triad Council of Governments, Greensboro, N.C.
REGIONAL SOLID WASTE DISPOSAL STUDY. PHASE I.
Final rept.
Apr 72, 41p
See also Phase 2, PB-223 889.

Descriptors: (*North Carolina, *Solid waste disposal), Government policies, Local government, State government, Forecasting, Regional planning.

The report summarizes the first step in the solid waste management planning process instituted by the eleven-county Piedmont Triad Council of Governments (PTCOG). It represents a composite of research and discussion by the PTCOG staff, its Regional Solid Waste Management Advisory Committee, and the consultant. Sections of the document highlight the solid waste disposal problem based on 1968 research by the State Board of Health. Issues for regional consideration are posed. Goals for regional solid waste management programs are suggested. Forecasts of land area needs for disposal are also included.

PB-223 889/7GA PC$6.50/MF$1.45
Piedmont Triad Council of Governments, Greensboro, N.C.
REGIONAL SOLID WASTE MANAGEMENT STUDY. PHASE II.
Final rept.
Apr 73, 87p
See also Phase 1, PB-223 888.

Descriptors: (*North Carolina, *Solid waste disposal), Forecasting, Cost estimates, Regulations, Local government, State government, Demography, Questionnaires, Regional planning.
Identifiers: Sanitary landfills.

The report summarizes the second step in the solid waste management planning process instituted by the Piedmont Triad Council of Governments (PTCOG). It represents a composite of research and discussion by the PTCOG Staff, its Regional Solid Waste Management Advisory Committee, professionals at various governmental levels, and the consultant. Sections of the document build upon data and considerations put forth in Phase I of the Study with particular emphasis on refining estimates, delineating existing and potential service districts, establishing general site locations and capital improvements estimates, and preliminary recommendations for a regional approach to solid waste management.

PB-223 891/3GA PC$4.00/MF$1.45
North Central Alabama Regional Council of Governments, Decatur.
ZONING ORDINANCE FOR TRINITY, ALABAMA.
Final rept.
Apr 73, 36p ALA-NCA-1705-1020-01

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Trinity(Alabama).

Recommended zoning regulations are presented to govern the use of land throughout the entire incorporated area of Trinity, AL. The document is prepared in legal form and includes an official zoning map.

PB-223 895/4GA PC$5.50/MF$1.45
Colorado State Univ., Fort Collins. Dept. of Agricultural Engineering.
MATHEMATICAL MODELING OF URBAN WATER MANAGEMENT STRATEGIES.
Doctoral thesis,
Wynn R. Walker. Aug 73, 206p* OWRR-B-071-Colo(5), W73-14757

Descriptors: (*Urban areas, Water supply), (*Water supply, Management planning), Optimization, Mathematical models, Computerized simulation, Sewage treatment, Systems analysis, Water distribution, Water quality, Decision making, Cost estimates, Arid land, Theses.
Identifiers: *Denver(Colorado).

The rapid expansion of many western urban centers has nearly outstripped available stream flow and groundwater resources requiring municipal water departments to initiate exhaustive searches for new water supplies. Among the most feasible alternatives being investigated to date are acquisition and transfer of agricultural rights, interbasin water diversions, and wastewater recycling. A management level urban water system model has been formulated in which a system analysis format is employed to answer some of the basic questions concerning the optimal combination of these alternative supplies. The model incorporates a nonlinear differential optimization algorithm to coordinate urban water supply, distribution, and wastewater management. A test of the model's utility is made in an application to the water management problems of the Denver, Colorado metropolitan area. (Modified author abstract)

PB-223 899/6GA PC$3.75/MF$1.45
Transportation Systems Center, Cambridge, Mass.
ENHANCEMENT OF TRAIN VISIBILITY.
Final rept. Nov-Dec 72,
John B. Hopkins. Sep 73, 84p* DOT-TSC-FRA-73-1 FRA-ORD/D-74-15

Descriptors: (*Railroad trains, Visibility), (*Collision research, Warning systems), Fluorescent lamps, Motion, Detection, Effectiveness, Electrical properties, Cost estimates, Accident prevention, Flash lamps, Incandescent lamps, Xenon lamps, Reflectors, Specifications, Traffic safety.

The report describes a study of the most effective and practical means of enhancing the conspicuity of the trailing end of trains, in order to reduce the possibility of train--train collisions. There are five elements: (a) Definition of a usable number of categories of target, background, and ambient conditions which include the great majority of situations actually encountered; (b) estimation of the stimuli required for each category to increase significantly the detection probability for typical observers; (c) examination of all potentially feasible visibility aids in terms of these criteria; (d) determination of estimated costs, lifetime, and power consumption of techniques which appear promising in terms of effectiveness, and (e) delineation of alternative systems, consistent with one another, comprising a hierarchy of effectiveness and cost. Special deficiencies, advantages, and implications for policy which may be associated with particular realizations are indicated. The devices suggested as optimal include large areas of fluorescent material arranged in a distinctive pattern, retro-reflectors at each corner, and flash lamps of moderate intensity. Detailed specifications are given for such aids.

PB-223 902/8GA PC$3.00/MF$1.45
Transporation Systems Center, Cambridge, Mass.
GRADE CROSSING PROTECTION IN HIGH-SPEED, HIGH-DENSITY, PASSENGER-SERVICE RAIL CORRIDORS.
Final rept. Jan-Feb 73,
John B. Hopkins. Sep 73, 40p* DOT-TSC-FRA-73-3 FRA-ORD/D-74-14
Contract DOT-RR-302

Descriptors: (*Railroads, *Intersections), (*Highways, *Vehicular traffic control), Traffic signals, Warning devices, Barriers, Law enforcement, Rapid transit railways, Traffic safety, Urban planning.
Identifiers: Grade crossings.

The report is a preliminary examination of special aspects of grade crossing protection for operation of high-speed passenger trains in rail corridors for which complete grade separation is not possible. Overall system needs and constraints are indicated, and their implications examined. Application of conventional and improved hardware is considered, with special attention to activation criteria, appropriate motorist-warning devices,

stalled-vehicle indicators, and train-mounted components. Nonitechnical aspects of the problem are also discussed, and areas for which future research efforts may be appropriate are identified. (Author)

PB-223 906/9GA PC$2.75/MF$1.45
North Dakota Water Resources Research Inst., Fargo.
DISPOSAL OF SUGAR REFINERY LAGOON EFFLUENTS BY SOIL SPREADING.
Rept. for Mar 68-Jun 70,
B. R. Funke, and Fred W. Schroer. May 73, 14p
WI-221-016-73 W73-14755, OWRR-A-019-NDAK(2)
Contract DI-14-01-0001-1402, DI-14-01-0001-1854

Descriptors: (*Sugar crops, Refining), (*Industrial waste treatment, Sugar crops), Irrigation, Evapotranspiration, Water pollution, Fluid infiltration, Soils.
Identifiers: *Water pollution control, Soil spreading.

Disposal of sugar refining wastes in the Red River Valley of North Dakota and Minnesota represents a considerable problem. The present plants produce wastes with a BOD on the order of 1-2 million people equivalents annually. Their disposal in water is now severely curtailed and will be completely banned in the near future. The object of these experiments was to determine the volumes of water which might be disposed of by soil spreading, the effects of these effluents on soil conditions and fertility, and the most feasible cropping to be used on such irrigated lands. (Modified author abstract)

PB-223 912/7GA PC$2.75/MF$1.45
Ohio State Univ., Columbus. Water Resources Center.
PUBLIC INVESTMENT CRITERIA FOR WATER ORIENTED RECREATION IN THE LAKE ERIE BASIN.
Project Completion rept.,
Richard A. Tybout. Dec 72, 11p 346X W73-14774, OWRR-A-009-OHIO(1)
Contract DI-14-01-0001-1403

Descriptors: (*Water pollution, *Economic analysis), (*Recreational facilities, *Lake Erie), Investments, Demand(Economics), Criteria, Error analysis, Regression analysis, Economic models.
Identifiers: Resource allocation, Coase theorem.

The research results of an attempt to correct several basic flaws in the economic theory relevant to pricing pollution and other negative externalities are presented. The validity of the theorem concerning the ownership of a polluting factor and its effect on the allocation of resources is criticized. Comprehensive measurement of the demand for water-based recreation is discussed. Three important effects which must be reflected in shift parameters were noted, and a theoretical model for shift analysis within an econometric framework was developed.

PB-223 913/5GA PC$2.75/MF$1.45
Minnesota Univ., St. Paul. Dept. of Agricultural and Applied Economics.
FINANCING ALTERNATIVES FOR REGIONAL RESOURCE DEVELOPMENT,
Wilbur R. Maki. 14 Apr 73, 25p OWRR-B-044-Minn(1), W73-14861
Contract DI-14-31-0001-3293
Presented at the Mid-Continent Regional Science Association Meetings, held in Stillwater, Okla., on 13-14 Apr 73.

Descriptors: (*Regional planning, *Minnesota), (*Water supply, Regional planning), Development, Water conservation, Watersheds, River basins, Financial management.

In Minnesota, a multi-county scale of resource planning and development is being promoted by the State Planning Agency. Today, all of the 13 Minnesota planning regions have been or are being organized by multi-county planning and development councils. A major concern of these councils is the financing, provision and delivery of critical social and environmental services, like health care and, also, water supply and wastewater treatment. To help in developing and testing alternative approaches to resource development, a multi-county study area was selected several years ago in West Minnesota. The regional development implies certain requirements for the 14-county study area. At this time the financing requirements of area systems for municipal and industrial water, wastewater treatment, solid waste disposal, flood control, land treatment and drainage, irrigation, recreation, and power is being identified. Portions of this document are not fully legible.

PB-223 915/0GA PC$3.50/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
PRELIMINARY SEWER STUDY FOR VREDENBURGH, ALABAMA.
Final rept.,
Charles W. Himes. Jun 73, 30p ALA-ATR-1770-1020-01

Descriptors: (*Urban planning, *Alabama), (*Sewers, Urban planning), Construction, Project planning, Maps, Economic factors.
Identifiers: Vredenburgh(Alabama).

The study examines the feasibility of construction of a gravity flow sanitary sewer system for the town of Vredenburgh. A contour map at two-foot intervals was prepared; and the theoretical location of lines to serve all residences were drawn thereon. Profile sheets showing ground level and manholes with invert elevations are part of the study. Conclusions as to practical and economic feasibility are drawn. (Author)

PB-223 916/8GA PC$6.25/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
SKETCH DEVELOPMENT PLAN FOR EXCEL, ALABAMA.
Final rept.,
Charles W. Himes. Jun 73, 81p ALA-ATR-0580-1020-03

Descriptors: (*Urban planning, *Alabama), Economic analysis, Transportation, Public utilities, Schools, Police, Fire protection, Recreation, Public health, Land use, Maps, Natural resources.
Identifiers: Excel(Alabama).

The report presents a comprehensive plan for a twenty-year period. The plan elements include: The population and economic characteristics and projections; transportation and utilities analysis; social services available to the population; analysis of the education facilities and adequacy of the system; discussions of the public safety, recreation and culture, and health services; an initial housing element; existing land use and structure conditions with map; proposed land use with map; natural resources; Public improvements program; and capital improvements budget. (Author)

PB-223 917/6GA PC$4.25/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
ZONING ORDINANCE: TOWN OF THOMASTON, ALABAMA.
Final rept.,
Charles W. Himes. Apr 73, 44p ALA-ATR-1675-1020-01

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Thomaston(Alabama).

PB-223 921/8GA PC$4.50/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
SUBDIVISION REGULATIONS FOR THE TOWN OF EXCEL, ALABAMA.
Final rept.,
Charles W. Himes. Apr 73, 50p ALA-ATR-0580-1020-01

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Excel(Alabama).

PB-223 922/6GA PC$5.25/MF$1.45
Pratt (R. H.) Associates, Inc., Kensington, Md.
A STUDY OF LOW COST ALTERNATIVES TO INCREASE THE EFFECTIVENESS OF EXISTING TRANSPORTATION FACILITIES. VOLUME II. RESULTS OF CASE STUDIES AND ANALYSIS OF BUSWAY APPLICATION IN THE UNITED STATES,
John H. Dupree, and Richard H. Pratt. Jan 73, 185p* DOT-OS-20034-Vol-2
Contract DOT-OS-20034
See also PB-223 197.

Descriptors: (*Urban transportation, Research), (*Transportation management, Urban transportation), Urban areas, Vehicular traffic, Freeways, Buslines, Parking facilities, Surveys, Feasibility, Traffic engineering.
Identifiers: Exclusive bus lanes.

Volume II details the results of case study investigations and analyses of seven operating exclusive bus lanes. Three of the exclusive bus lanes operate as contraflow facilities on freeways, three as contraflow bus lanes on arterial streets, and one as a specially constructed bus lane. The study found that exclusive bus lanes were capable of processing large volumes of passengers often with substantial time savings over competing modes. Findings indicate that busways offer the potential for substantial gain in total capacity to move people. There is strong evidence that commuters are attracted to public transportation such as can be provided via an exclusive bus lane if travel time saving is achieved. Bus lanes can be made operable in a matter of weeks at a cost that can often be absorbed within operating budgets. A variety of technical, institutional and operating experiences associated with the various bus lanes now operational are detailed. In addition, the potential for bus lanes in five diverse urban environments is analyzed. Data are provided on Federal funding appropriate to establishing bus lanes.

PB-223 923/4GA PC$3.75/MF$1.45
Top of Alabama Regional Council of Governments, Huntsville.
INITIAL HOUSING ELEMENT, ARAB, ALABAMA.
Final rept.
Mar 73, 34p ALA-TAC-0065-1020-02

Descriptors: (*Urban planning, *Alabama), (*Residential buildings, Urban planning), Project planning, Objectives.
Identifiers: Arab(Alabama).

PB-223 926/7GA PC$3.75/MF$1.45
Pratt (R. H.) Associates, Inc., Kensington, Md.
LOW COST URBAN TRANSPORTATION ALTERNATIVES: A STUDY OF WAYS TO INCREASE THE EFFECTIVENESS OF EXISTING TRANSPORTATION FACILITIES: EXECUTIVE SUMMARY.
Final rept.,
Richard H. Pratt, and John H. Dupree. Jan 73, 77p* dot-OS-20034
Contract DOT-OS-20034
See also report dated Jan 73, PB-223 197.

Descriptors: (*Urban transportation, Research), (*Transportation management, Urban transportation), Urban areas, Vehicular traffic, Freeways,

Bus lines, Parking facilities, Surveys, Feasibility, Traffic engineering.
Identifiers: Exclusive bus lanes.

The Study was designed to survey and report on a variety of techniques for improving the utilization of the existing investment in transportation capital facilities. Concepts receiving primary attention were those directed toward reducing peak period transportation demand and/or increasing the carrying capacity of existing facilities. The idea was to identify and explore such low cost techniques, technologies, or management strategies with the hope that some would be found to serve as alternatives to increased investment in transportation capital facilties. A survey and analysis of twenty-one candidate techniques was performed to provide a balanced assessment of the promise of low cost alternatives.

PB-223 932/5GA PC$3.50/MF$1.45
California State Div. of Highways, Sacramento. Materials and Research Dept.
RECENT EXPERIMENTAL PCC (PORTLAND CEMENT CONCRETE) PAVEMENTS IN CALIFORNIA.
Interim rept. May 71-Nov 72,
D. L. Spellman, J. H. Woodstrom, B. F. Neal, and P. E. Mason. Jun 73, 56p* CA-HY-MR-5180-1-73-01
Sponsored in part by Federal Highway Administration. Washington, D.C.

Descriptors: (*Concrete pavements, Experimental design), (*Highways, *Portland cements), Concrete construction, Reinforced concrete, Reinforcing materials, Construction costs, Construction joints, Materials tests, California.

The construction of experimental PCC pavement sections is described. The predominant experimental feature was continuously reinforced concrete pavement with three different types of reinforcement. Also included, were unreinforced sections with weakened plane joints at about one-half the normal intervals, higher cement content, over designed thickness, and use of a lean concrete (4-sack) base. Design and construction details are presented along with a comparison of the construction costs of the various sections. Early performance characteristics are also discussed. The pavements will be monitored periodically to determine relative performance. (Author)

PB-223 934/1GA PC$11.25/MF$1.45
Piedmont Triad Council of Governments, Greensboro, N.C.
REGIONAL WATER SUPPLY AND WASTE-WATER DISPOSAL STUDY. INVENTORY AND PROBLEM DELINEATION.
Final rept. on Phase 1.
Jun 71, 184p
Prepared by Camp Dresser and McKee, Inc., Boston, Mass.

Descriptors: (*Water supply, North Carolina), (*Sewage treatment, North Carolina), (*Regional planning, *North Carolina), Inventories, Ground water, Surface waters, Water treatment, Industrial waste treatment, Questionnaires, Standards, Water pollution, River basin development.

The report describes existing and planned water supply and wastewater disposal systems located throughout the Piedmont Triad Region. This eleven-county area, also known as North Carolina State Planning Region G, is made up of the following counties: Alamance, Caswell, Davidson, Davie, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry and Yadkin. The use of surface water and groundwater sources for water supply is discussed as well as water resource planning within the study area. Wastewater disposal facilities within the study area are also discussed and specific problems regarding existing water supply and wastewater facilities are noted. An extensive bibliography, made up to both general references related to water resources of the study area and specific references to reports and other documents concerning cities, counties, streams, rivers and lakes, is included. (Author)

PB-223 940/8GA PC$4.50/MF$1.45
California State Office of Planning and Research, Sacramento.
THE STATE OF CALIFORNIA, SUMMARY: ENVIRONMENTAL GOALS AND POLICY.
Final rept.,
John S. Tooker. 1 Jun 73, 50p OPR-73-03

Descriptors: (*California, Objectives), (*Government policies, *Natural resources), Air pollution, Water pollution, Land use, Noise, Pesticides, Population growth, Transportation, Wildlife, State government, Regional planning.

The report is a statement of the state's environmental goals and policies as adopted by the Governor and is presented as a suggested guide for state government, all levels of local government, and the private sector. It contains general policies on air, land use, noise, pesticides, population, solid waste, transportation, and water. It also identifies the significant areas and potential areas of critical concern to the state for the following environmental resources: scientific, scenic and educational; wildlife habitats; forest and agriculture; open space surrounding metropolitan areas; beaches, lakes and riverbank access; connecting links for recreation; historic, archaeological and cultural resources; lands of hazardous concern; and environmental resource policies. Eleven fundamental principles to guide land use and environmental legislation are included.

PB-223 948/1GA PC$4.75/MF$1.45
North Central Alabama Regional Council of Governments, Decatur.
LAND USE SURVEY AND ANALYSIS, FALKVILLE, ALABAMA.
Final rept.
May 73, 55p ALA-NCA-0600-1020-01

Descriptors: (*Urban planning, *Alabama), (*Land use, Urban planning), Surveys, Community development, Public land, Drainage, Floods, Topography.
Identifiers: Falkville(Alabama).

The report provides basic data for analyzing land use, land use conditions, problems and development patterns for future growth trends including an analysis of topography, soils, drainage, floods, vacant land and other factors which influence development. The report is the third of several proposed planning documents to be undertaken as a part of a comprehensive planning program for the town of Falkville. (Modified author abstract)

PB-223 958/0GA PC$3.75/MF$1.45
South Carolina Administration Div., Columbia.
LAND USE PLAN AND PRELIMINARY THOROUGHFARE PLAN, LAKE VIEW, SOUTH CAROLINA,
Thomas C. Hammond. Jun 73, 31p SC-40-0014-0583

Descriptors: (*Urban planning, *South Carolina), (*Land use, Urban planning), Populations, Planning, Estimates, Streets, Residential buildings.
Identifiers: Lake View(South Carolina).

The report contains information concerning the existing and future use of land in Lake View to the year 1990. It estimates future population growth and the additional land needed to accomodate this growth. It recommends a plan to guide this growth in an orderly fashion as well as correct existing land use conflicts. A preliminary thoroughfare plan provides the framework for the land use plan. Implementing actions are also recommended. (Author)

PB-223 959/8GA PC$4.75/MF$1.45
Tacoma, Wash.
TACOMA TRANSIT ANALYSIS.
Final rept. Mar 72-Jan 73.
Jan 73, 158p
Grant NSF-GT-34903
Prepared in cooperation with Boeing Aerospace Co.

Descriptors: (*Urban transportation, *Washington(State)), (*Systems analysis, *Bus lines), Cost analysis, Improvement, Route surveys, Scheduling, Planning, Revenue, Management.
Identifiers: Tacoma(Washington), Totem One program.

The major objective of the analysis was to define methods of decreasing the operating losses of the transit system. The areas studied included organizational improvements, cost reduction, service improvements, image improvements, and automated data systems

PB-223 961/4GA PC$8.25/MF$1.45
Florida Univ., Gainesville. Dept. of Food and Resource Economics.
RIVER BASIN SIMULATION AS A MEANS OF DETERMINING OPERATING POLICY FOR A WATER CONTROL SYSTEM.
Doctoral thesis,
Clyde Frederick Kiker. 1973, 123p W73-14761,
OWRR-B-007-FLA(7)
Contract DI-14-31-0001-3267

Descriptors: (*Florida, Water resources), (*Management planning, *Water resources), Computerized simulation, Kissimmee River basin, River basin development, Regional planning, Organization theory, Watersheds, Water supply, Surface waters, Decision making, Theses.

The problem of dealing with the formulation of water management policy for the area of south Florida within the Central and Southern Florida Flood Control District was undertaken. The objectives were to (a) propose an organizational framework in which hydrologic, economic, and institutional aspects of the region may be used in policy development, (b) develop a simulation model which includes the salient hydrologic, economic, and institutional features of the Upper Kissimmee River Basin to serve as a guide, (c) demonstrate the usefulness of the simulation model in policy evaluations, and (d) determine the appropriateness of the approach for use in policy problems encountered when dealing with a large region. A first-generation simulation model of the hydrologic phenomena and water-oriented activities in the Upper Kissimmee River Basin was developed. Models of the surface water management system, the water use activities, and the institutional constraints were interfaced with rainfall and watershed runoff models.

PB-223 962/2GA PC$2.75/MF$1.45
Kansas Water Resources Research Inst., Manhattan.
DESIGN AND CONTROL OF TRANSIENT WASTE TREATMENT PROCESSES,
Larry E. Erickson. Jul 73, 21p* Contrib-122
OWRR-A-045-KAN(2), W73-14762

Descriptors: (*Sewage treatment, *Process control), (*Activated sludge process, Feedback control), Measurement, Summarizing, Dynamics, Adenosine phosphates, Control theory.
Identifiers: Water pollution control.

The rate at which many wastes are generated varies significantly with time. This research was concerned with the development of measurement procedures to characterize the state of the system, the development of open loop dynamic response information for the activated sludge process, and the synthesis of optimal feedback control systems for waste treatment processes. The use of adenosine triphosphate as a measurable variable to

help characterize the state of the process was investigated. This variable responded rapidly to changes in cell physiological state and with the population dynamics of the culture. Important time constants in the activated sludge process have been identified and estimated from the open loop dynamic studies. Optimal feedback control theory has been applied to growth processes and results have been obtained for a completely mixed flow system. (Author) Portions of this document are not fully legible.

PB-223 966/3GA PC$7.75/MF$1.45
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Fisheries and Wildlife Sciences.
A COMPUTER-IMPLEMENTED INSTRUCTIONAL GAME FOR EVALUATION WATER MANAGEMENT ALTERNATIVES.
Completion rept.,
Robert T. Lackey. Jul 73, 115p W73-14772, OWRR-A-049-VA(1)

Descriptors: (*Reservoirs, *Management training), (*Management games, *Water resources), Computer programs, FORTRAN, Systems analysis, Computerized simulation, Smith Mountain Lake, Roanoke River, Virginia.
Identifiers: DAM computer program, FORTRAN 4 programming language, IBM 370 computers.

A management game is developed that can be used by resource agencies for workshops, in-service training programs, and other learning situations that allows players (professional water managers, administrators, and others concerned with water management) to evaluate outcomes of different management strategies. The game, DAM, illustrates the principles of managing a large multiple use reservoir system.

PB-223 971/3GA PC$4.25/MF$1.45
Cornell Univ., Ithaca, N.Y. Water Resources and Marine Sciences Center.
THE VALUE OF RESERVOIR RECREATION.
Technical rept.,
Jeff Romm. Aug 69, 116p* TR-19 OWRR-B-002-NY(6), W73-14775
Also pub. as Cornell Univ., Ithaca, N.Y. Dept. of Agricultural Economics, A.E. Res-296.

Descriptors: (*Recreational facilities, Benefit cost analysis), (*Reservoirs, Recreational facilities), Public works, Financial management, Scheduling, Surveys, Evaluation, New york.
Identifiers: Broome County(New York), Whitney Point Reservoir.

The purpose of recreation benefit estimation is to facilitate comparisons between recreation and alternative public investment opportunities. It provides a means to answering the important question of how scaree public resources should be alloted to activities for which there is no market indicator of value. Some methods of recreation benefit estimation are compared. Comparisons are based upon data collected in a survey of recreationists at Whitney Point Reservoir, Broome County, New York, during the summer of 1966. Recreation development in this area has required a significant expenditure of public resources, as well as sacrifice in the flood control capability of a dam. These development costs, justified with little idea of benefits that would result, are an example of the need for improving techniques of recreation benefit estimation.

PB-223 975/4GA PC$3.75/MF$1.45
Consortium of Universities, Washington, D.C. Urban Transportation Center.
TRANSPORTATION POLICY ALTERNATIVES AND THE SOCIOECONOMIC REACTIONS: A CASE STUDY OF THE WASHINGTON METROPOLITAN AREA.
Final rept. Sep 72-Aug 73,
James E. Gale. Aug 73, 92p UTC-07-73 UMTA-DC-11-0003-73-3
Prepared in cooperation with the Metropolitan Washington Council of Governments.

Descriptors: (*Urban transportation, *District of Columbia), (*Urban sociology, Urban planning), Mathematical models, Employment, Income, Systems analysis, Urban development, Evaluation.
Identifiers: Computerized simulation.

The primary purpose of the research is to study the effect of transportation policy alternatives on socioeconomic variables in the Washington metropolitan area. The computer simulations tool used in this study is the EMPIRIC Activity Allocation Model. Socioeconomic variables refer to population, employment and income quantities. A secondary purpose of the study is to evaluate the efficacy of the EMPIRIC model in urban transportation planning. It is emphasized that the conclusions of the sensitivity study, although pertinent to the Washington metropolitan area, may be applicable to other urban areas as well. The conclusions are numerous and range from the relative impact of transit and freeway systems on the socioeconomic quantities to the feedback effect of these quantities on transportation system usage. The transit approach is found to be a better alternative than the freeway approach. In addition, the EMPIRIC model is judged on its ability to reproduce the proper mechanisms and sensitivity of urban growth with respect to transportation policy inputs. (Author)

PB-223 980/4GA PC$4.75/MF$1.45
Massachusetts Inst. of Tech., Cambridge. Energy Lab.
COST EVALUATION OF AIR POLLUTION CONTROL STANDARDS.
Final rept.
Michael Frederick Ruane. Feb 73, 162p* MIT-EL-73-012
Grant NSF-GI-32874
See also PB-223 995.

Descriptors: (*Air pollution, *Steam electric power generation), (*Sulfur dioxide, Electric power plants), (*Particles, Electric power plants), (*Electric power plants, *Combustion products), Mathematical models, Scrubbers, Atmospheric diffusion, FORTRAN, Computer programs, Site surveys, Theses.
Identifiers: Emission factors, *Air pollution abatement.

A model is developed to describe the sulfur dioxide and particulate air pollution characteristics of a fossil fueled steam electric power plant. The model contains three stages. The first considers boiler emissions and the application of one of four parameterized abatement methods: wet limestone scrubbing, catalytic oxidation, magnesium oxide scrubbing, and the use of tall stacks. The second stage tests stack emissions and uses meteorological dispersion models, particularly the double gaussian model, to determine and test three hour, twenty-four hour and annual worst case ground level concentrations. The third stage calculates the performance of the abatement method used in terms of economics and resource costs. The model can be used to determine feasible combinations of plant types, site types and abatement methods as support for a separate generation expansion model. It can also be used independently to study environmental and economic sensitivities to changes in air pollution standards. (Modified author abstract)

PB-223 983/8GA PC$8.25/MF$1.45
Isothermal Planning and Development Commission, Rutherfordton, N.C.
FUNCTIONAL WATER AND SEWERAGE PLAN AND PROGRAM.
Final rept.
Jul 73, 125p IPDC-WS-73
Prepared by LBC and W Consultants/PRM, Inc., Columbia, S.C.

Descriptors: (*Water resources, *Regional planning), (*Sewage, *North Carolina), Project planning, Demand(Economics), Systems engineering, Surveys, Objectives, Improvements, Recommendations, Requirements, Demography.
Identifiers: Cleveland County(North Carolina), McDowell County(North Carolina), Polk County(North Carolina), Rutherford County(North Carolina).

The report presents the functional water and sewerage plan for a four-county region in North Carolina. It incorporates projected population demand for water and sewerage services, and proposes several sub-regional systems to provide the required level of service to meet these demands. An implementation program is outlined.

PB-223 989/5GA PC$9.00/MF$1.45
Alabama Development Office, Montgomery.
EVALUATION OF COMPREHENSIVE PLAN, PHENIX CITY, ALABAMA.
Final rept.
Jun 73, 137p ALA-PSI-1365-1020-01

Descriptors: (*Urban planning, *Alabama), Evaluation, Project planning, Local government.
Identifiers: Phenix City(Alabama).

The report represents an assessment of the comprehensive planning documents prepared for the use of the city. The report is directed at determining the usefullness of the planning documents to the city administration, the extent to which the plans have been implemented to date, and the impact of planned development activities on the Phenix City community. (Author)

PB-223 991/1GA PC$5.50/MF$1.45
South Alabama Regional Planning Commission, Mobile.
URBAN BEAUTIFICATION AND IMPROVEMENT PROGRAM, CHICKASAW, ALABAMA.
Final rept.
Jun 73, 69p ALA-SAR-0365-1020-01

Descriptors: (*Urban planning, *Alabama), Parks, Community development, Landscaping, Decorating, Esthetic properties, Recreational facilities.
Identifiers: Chickasaw(Alabama).

The report presents a program of beautification and urban enhancement for the city of Chickasaw. It delineates guidelines for such enchancement and explains the economic, health, safety, and aesthetic values to be derived from the program. Above average, average and below average areas are illustrated and specific beautification proposals are recommended for achievement over a five-year period. The report also presents an assessment of the impact that this beautification program will likely have on the urban environment of Chickasaw. (Author)

PB-223 992/9GA PC$5.50/MF$1.45
Top of Alabama Regional Council of Governments, Huntsville.
ZONING ORDINANCE OF THE CITY OF ARAB, ALABAMA.
Final rept.
Jun 73, 66p ALA-TAC-0065-1020-01

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Arab(Alabama).

The zoning ordinance is a revision of a previous ordinance adopted in 1966. It regulates land use within the corporate limits of Arab. The ordinance lists permitted uses and uses allowed as a special exception. The ordinance also lists dimensional requirements for the nine zoning districts, along with off-street parking, loading and unloading requirements and provisions for enforcement and administration. The ordinance also contains provi-

sions for the regulation of mobile home parks. (Author)

PB-223 993/7GA PC$3.75/MF$1.45
Jet Propulsion Lab., Pasadena, Calif.
FOUR CITIES - HIGH TECHNOLOGY FACES URBAN PROBLEMS - AN INTERIM REPORT.
14 Sep 73, 31p JPL-1200-100 NSF-RA/G-73-035
Contract NAS7-100

Descriptors: (*Municipalities, *Transfer of technology), (*Urban planning, *California), Management planning, Urban areas, Problem solving, Services, Counseling, Projects, Reviews, Aerospace engineering, Industrial engineering.
Identifiers: Quality of life, San Jose(California), Fresno(California), Pasadena(California), Anaheim(California), Four cities program.

The document reports on the first two years activity of the Four Cities Program in California, which represents a new approach in the application of technology to domestic needs and a new use for part of what has been learned in recent decades in systems engineering and management. Begun as an exploratory investigation of technology transfer to city management, it has become a continuing demonstration of the teamwork approach in discovering, organizing, communicating, and operating new solutions to urban problems. Each of four project teams pairs a city government with a high-technology or aerospace firm, with the main effort carried by a senior scientific or engineering professional from the company who serves as science and technology advisor to the City Manager.

PB-223 997/8GA PC$5.00/MF$1.45
South Alabama Regional Planning Commission, Mobile.
INITIAL HOUSING ELEMENT, FOLEY, ALABAMA.
Final rept.
Jun 73, 59p ALA-SAR-0645-1020-02

Descriptors: (*Urban planning, *Alabama), (*Residential Buildings, Urban planning), Surveys, Objectives, Project planning, Recommendations.
Identifiers: Foley(Alabama).

The report identifies existing housing conditions in the City of Foley. Objectives and implementing actions which are necessary to alleviate housing problems are discussed. Community activities needed to carry out the recommended program are identified. (Modified author abstract).

PB-224 004/2GA PC$7.25/MF$1.45
South Alabama Regional Planning Commission, Mobile.
ZONING ORDNANCE, FOLEY, ALABAMA.
Final rept.
Jun 73, 101p ALA-SAR-0645-1020-08

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Foley(Alabama).

The report and map present an update of the Zoning Ordinance of the City of Foley. It includes the latest amendments to the existing Zoning Ordinance as well as recommended changes that will make the Ordinance an effective tool in helping to shape the future development of Foley. (Author)

PB-224 007/5GA PC$5.25/MF$1.45
South Alabama Regional Planning Commission, Mobile.
POPULATION AND ECONOMY, FOLEY, ALABAMA.
Final rept.
Jun 73, 64p ALA-SAR-0645-1020-01

Descriptors: (*Urban planning, *Alabama), Economic analysis, Population migrations, Employment, Community development.
Identifiers: Foley(Alabama).

The report is an up-date of an original population and economic study of 1966. The report presents the major population and economic characteristics, past and present, as well as future projections. Emphasis is placed on those population characteristics which may give rise to social problems and which are also closely related to future economic growth. (Modified author abstract)

PB-224 008/3GA PC$4.25/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
ZONING ORDINANCE FOR THE TOWN OF EXCEL, ALABAMA,
Charles W. Himes. Apr 73, 43p ALA-ATR-0580-1020-02

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Excel(Alabama).

The zoning regulations are made in accordance with the comprehensive plan for purposes of guiding development in accordance with existing and future needs. These regulations govern the location, height, bulk, number of stories, the percentage of lot which may be occupied, size of yards, the density and distribution of population, creates districts, defines certain terms used herein, provides for enforcement, and establishes the zoning board of adjustment. (Author)

PB-224 012/5GA PC$4.75/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
SUBDIVISION REGULATIONS FOR THE TOWN OF THOMASTON, ALABAMA.
Final rept.,
Charles W. Himes. Apr 73, 51p ALA-ATR-1675-1020-02

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Thomaston(Alabama).

The regulations set forth: Plat review procedure; the manner in which sketch design plans, preliminary and final plats are to be prepared and the information they should contain; design standards, required improvements; and the necessary monumenting for the process of subdivision. The regulations were prepared and printed in a legal form suitable for adoption by the town. (Author)

PB-224 023/2GA PC$2.20/MF$1.45
Highway Research Board, Washington, D.C.
HIGHWAY AND BRIDGE MAINTENANCE: OPERATIONS, COSTS, AND MODELING,
Kenneth M. Hall. 1973, 70p HRB-Record-451
Reports Prepared for the Annual Meeting of the Highway Research Board (52nd), Jan 73.
Paper copy also available from Highway Research Board, National Academy of Sciences, 2101 Constitution Ave., N. W. Washington, D. C. 20418 $2.20.

Descriptors: (*Highways, Maintenance), Highway bridges, Maintenance management, Maintenance equipment, Bridge decks, Delaminating, Computerized simulation, Civil engineering, Cost control, Sudan.
Identifiers: Highway maintenance.

The operations and costs of highway and bridge maintenance are discussed and models are presented. (Author)

PB-224 024/0GA PC$5.50/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
SKETCH DEVELOPMENT PLAN FOR SWEET WATER, ALABAMA.
Final rept.,
Charles W. Himes. Jun 73, 68p ALA-ATR-1637-1020-01

Descriptors: (*Urban planning, *Alabama), Transportation, Public utilities, Economic analysis, Education, Recreation, Public health, Residential buildings, Land use, Police, Fire protection.
Identifiers: Sweet Water(Alabama).

The report presents a comprehensive plan for a twenty-year period. The plan elements include: The population and economic characteristics and projections; transportation and utilities analysis; social services available to the population; analysis of the education facilities and adequacy of the system; discussions of the public safety, recreation and culture, general government and health services; an initial housing element; existing land use and structure conditions with map; proposed land use with map; and natural resources. (Author)

PB-224 049/7GA PC$4.25/MF$1.45
Barton-Aschman Associates, Inc., Chicago, Ill.
AIRPORT TRAVEL SURVEY MANUAL.
Final rept.
Jul 73, 106p* DOT-FH-11-7889
Contract FH-11-7889

Descriptors: (*Airports, Vehicular traffic), (*Vehicular traffic, Surveys), Manuals, Urban transportation, Urban planning, Access roads, Travel, Vehicles, Parking facilities, Loading procedures.

The manual contains guidelines for the collection of data describing ground travel patterns and tripmaker characteristics to and from air carrier airports. The manual is written for professionals responsible for conduction airport travel surveys. The introductory material describes the nature of travel patterns at air carrier airports and provides an overview of the eight major steps in the travel data collection process. The advantages and disadvantages of alternative survey strategies are presented along with five types of data collection techniques (personal interviewing, collected questionnaires, mail-back questionnaires, counts or observations, and inference from existing data sources). Criteria are given for the selection of appropriate survey strategies and data collection techniques. Survey specifications are presented in terms of sample base, methods for sample selection, methods for control counts, formats for questionnaires, and approximate unit costs involved. Guidelines are included for processing survey data and monitoring airport travel patterns after completion of the basic surveys. An extensive glossary and an annotated bibliography appear at the end. The appendices deal with how to train interviewers to reduce bias and how to calculate the appropriate sample size.

PB-224 050/5GA PC$5.25/MF$1.45
Washington State Dept. of Highways, Olympia.
BLUE STREAK BUS RAPID TRANSIT DEMONSTRATION PROJECT.
Final rept. Jun 70-Dec 72.
Jun 73, 194p
Prepared by Voorhees (Alan M.) and Associates, Inc. Seattle, Wash. See also PB-222 126.

Descriptors: (*Urban transportation, *Washington(State)), (*Bus lines, Projects), Evaluation, Mass transportation, Central city, Surveys, Parking facilities, Routes, Traffic engineering, Ramps, Freeways, Vehicular traffic.
Identifiers: Seattle(Washington), Exclusive bus lanes.

Blue Streak was an express bus demonstration project to test the effects of increased levels of

service on transit routes and the overall impact of a parkaride lot with express service to downtown. Blue Streak buses used the reversible lanes of Interstate 5 between their service area and downtown Seattle, and had exclusive use of a reversible ramp in the central business district. The two and one-half year demonstration produced patronage increases in the face of overall system declines. The impact of the service on the freeway was transitory since freeway volumes were also deconing. The park-ride aspect was very successful with an estimated potential of more than twice the patronage generated by the project. Park-ride patronage was limited by the parking space capacity of the lot. Guidelines were studied for the location of park-ride lots, the impact of exclusive transit freeway ramps was simulated, and a modal split model was calibrated.

PB-224 051/3GA PC$3.75/MF$1.45
South Alabama Regional Planning Commission, Mobile.
PUBLIC IMPROVEMENTS PROGRAM AND CAPITAL IMPROVEMENTS BUDGET, FOLEY, ALABAMA.
Final rept.
Jun 73, 31p ALA-SAR-0645-1020-06

Descriptors: (*Urban planning, *Alabama), Public buildings, Construction, Budgeting, Scheduling, Cost estimates.
Identifiers: Foley(Alabama).

Based on anticipated economic activity, population growth, future land development patterns, transportation system, and other physical and environmental as well as financial considerations, the Public Improvements Program and Capital Improvements Budget suggest priority schedules and cost estimates applicable to improvements recommended during the program period. (Author)

PB-224 053/9GA PC$7.00/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
SKETCH DEVELOPMENT PLAN FOR EVERGREEN, ALABAMA.
Final rept.,
C. W. Himes. Jun 73, 97p ALA-ATR-0575-1020-01

Descriptors: (*Urban planning, *Alabama), Transportation, Economic analysis, Education, Recreation, Public health, Residential buildings, Natural resources, Police, Fire protection, Maps.
Identifiers: Evergreen(Alabama).

The report presents a comprehensive plan for a twenty-year period. The plan elements include: The population and economic characteristics and projections; transportation and utilities analysis; social services available to the population; analysis of the education facilities and adequacy of the system; discussions of the public safety, recreation and culture, general government and health services; an initial housing element; existing land use and structure conditions with map; proposed land use with map; and natural resources. (Author)

PB-224 054/7GA PC$5.50/MF$1.45
Alabama-Tombigbee Rivers Regional Planning and Development Commission, Camden.
SKETCH DEVELOPMENT PLAN FOR BEATRICE, ALABAMA.
Final rept.,
C. W. Himes. Jun 73, 69p ALA-ATR-0155-1020-01

Descriptors: (*Urban planning, *Alabama), Transportation, Economic analysis, Education, Recreation, Police, Fire protection, Land use, Public health, Public utilities, Maps, Residential buildings.
Identifiers: Beatrice(Alabama).

The report presents a comprehensive plan for a twenty-year period. The plan elements include: The population and economic characteristics and projections; transportation and utilities analysis; social services available to the population; analysis of the education facilities and adequacy of the system; discussions of the public safety, recreation and culture, and health services; an initial housing element; existing land use and structural conditions with map; proposed land use with map; and natural resources. (Author).

PB-224 057/0GA PC$5.75/MF$1.45
Michigan Univ., Ann Arbor. Dept. of Civil Engineering.
FACTORS AFFECTING INNOVATION IN WATER QUALITY MANAGEMENT: IMPLEMENTATION OF THE 1968 MICHIGAN CLEAN WATER BOND ISSUE.
Completion rept. Jul 71-Aug 73,
Steven L. Yaffee, and Jonathan W. Bulkley. Aug 73, 248p W73-14871, OWRR-A-054-MICH(1)
Contract DI-14-31-0001-3522

Descriptors: (*Water resources, *Management analysis), (*Water pollution, *Michigan), Legislation, Decision making, Planning, Public administration, Information systems, State government, Grants.
Identifiers: Water pollution abatement, Bond issues.

This report focuses upon factors affecting innovation in the implementation of the 1968 Michigan Clean Water Bond Issue. The Joint Legislative Committee on Water Resources Planning which sized the bond program did not consider nutrient removal or any treatment beyond secondary in its determination of the fiscal resources necessary to meet 1980 Water Pollution Control objectives. Consequently, the fiscal resources were limited from inception. The net effect of the Clean Water Bond program maintains a 1968 status quo situation. Factors resisting innovation are identified. Factors enhancing innovation are identified. An automated information storage/retrieval system for monitoring wastewater treatment facility funding is developed. Structural and process changes for future innovation are recommened. (Modified author abstract)

PB-224 063/8GA PC$3.00/MF$1.45
New York State Assembly Scientific Staff, Albany.
AGRICULTURAL POLLUTION CONTROL AND ENFORCEMENT IN NEW YORK STATE.
Final rept. 3 Jul-17 Nov 72,
Theresa Flaim. Nov 72, 27p SS-201
Grant NSF-GT-32162
Prepared in cooperation with the Cornell Univ., Ithaca. Dept of Agricultural Economics.

Descriptors: (*Agricultural wastes, *New York), Water pollution, Air pollution, Food processing, Livestock, Surface water runoff, Cost estimates, Summarizing, Sources.
Identifiers: Feedlot wastes, Water pollution abatement, Air pollution abatement, Manure.

The paper summarizes briefly the research that has been done to date on the extent, magnitude, control and enforcement of agricultural pollution which would be of interest to New York legislators. Section two deals with the extent, location and types of agricultural pollution existing in the state. Section three deals with the various available means of abating pollution as well as new methods that might be developed through additional research efforts. Section four examines the advantages and limitations of the commonly suggested methods of enforcement of agricultural pollution control. Section five analyzes the possible cost impacts of agricultural pollution control legislation. The findings of the study are summarized in Section six, with conclusions drawn regarding further research needs and implications for policy-makers.

PB-224 069/5GA PC$3.75/MF$1.45
Metropolitan Washington Council of Governments, D.C.
IMPLEMENTATION OF BALANCED HOUSING POLICIES: THE A-95 HOUSING REVIEW MANUAL.
Housing information rept. no. 3 (Final).
Apr 73, 95p
Sponsored in part by Department of Housing and Urban Development.

Descriptors: (*Residential buildings, *Government policies), (*Urban planning, *District of Columbia), (*Regional planning, *Manuals), Factor analysis, Federal budgets, Recommendations, Coordination, Reviews.
Identifiers: A-95 reviews, Low income housing, Moderate income housing, Washington metropolitan area.

The manual presents a case study of the use of the A-95 review process to implement the Fair Share Housing Formula and balanced housing policies in the Washington Metropolitan Area. Primary emphasis is upon the development of policies and procedures for effective review of federally assisted housing applications within the allotted 19-day time frame. Recommendations are included regarding improvement of the review process through increased coordination and communication.

PB-224 074/5GA PC$3.00/MF$1.45
Stanford Univ., Calif. Dept. of Industrial Engineering.
ANALYSIS AND DESIGN OF A TRANSPORTATION INFORMATION CENTER.
Final research rept.,
Randolph F. Buckley. Aug 73, 45p* RP-10 UMTA-CA-11-0008-73-3

Descriptors: (*Information centers, *Commercial transportation), (*Computer programming, *Information systems), Benefit cost analysis, Comparison, Manual controls, Abilities, Constraints, Reviews, Economic analysis, Evaluation, Computers, Feasibility, Management methods.
Identifiers: *Computerized public transportation information centers, Ridership.

The report is concerned with the computerization of public transportation information center. The costs and benefits of such a system are outlined and investigated. The computerized system is compared to the manual system and the capabilities and limitations of the manual system are explored. Four computer systems were chosen for evaluation in a hypothetical information center. The economic analysis of the four systems includes a buy/lease study based on multiple estimated system lines as well as on multiple capitalization factors. The report also examines the additional services which computers can provide. Certain limitaions inherent to the computerized system are also discussed.

PB-224 092/7GA PC$5.50/MF$1.45
California Univ., Los Angeles. School of Architecture and Urban Planning.
THE PREFERENTIAL TREATMENT OF MULTIPLE OCCUPANCY VEHICLES IN AN URBAN TRANSPORTATION CORRIDOR.
Final rept.,
Dan Link. Jun 73, 208p* UMTA-CA-11-0009-73-3

Descriptors: (*Urban transportation, Research), (*California, Urban transportation), Surveys, Urban areas, Freeways, Bus lines, Parking facilities, Evaluation.
Identifiers: Exclusive bus lanes.

The report is concerned with the growing traffic congestion on metropolitan highways, a situation which has become self-perpetuating. Because of increased concern for environmental quality, this trend is now changing with the tendency to improve existing systems in order to move more peo-

ple using fewer vehicles. Using the Hollywood/Golden State Freeway corridor in Los Angeles as an example, the report studies various preferential treatment schemes which would improve the person flow rate through the corridor, adding as few physical facilities as possible to the existing system. The investigation is made along three major criteria: transportation potential, engineering feasibility, cost, and several minor criteria. A relative importance scale coupled with a performance rating of each alternative by each criterion provides the final ratings. Two improvement schemes are recommended: Multiple occupancy vehicles by-passing other traffic at metered on-ramps; contraflow lanes on the off-peak directional roadways. The report is concluded with a discussion of the arrangements, potential, and consequences of the recommended practices. A bibliography is included.

PB-224 094/3GA PC$8.50/MF$1.45
Denver Regional Council of Governments, Colo.
PLANNING MANUAL FOR SOLID WASTE MANGEMENT.
Final rept.
Aug 72, 130p DRCOG-72-017
Prepared in cooperation with Urban Drainage and Flood Control District, Denver, Colo.

Descriptors: (*Solid waste disposal, *Systems analysis), (*Management planning, Solid waste disposal), (*Urban planning, Solid waste disposal).
Identifiers: *Denver(Colorado).

This report describes the system engineering methodology developed and used during Project REUSE for solid waste planning in the Denver region. The methodology is based on the concept of solid waste as a material stream flow through eight functions. The functions are used as the basis for analysis, with respect to problem definition, alternative development, evaluation, and preparation of short and long-range programs. Application of the methodology is illustrated by reference to Project REUSE solid waste planning, and development of the proposed twenty-year solid waste management program. This report is one of a series, related to solid waste management, resulting from Project REUSE (Renewing the Environment through Urban Systems Engineering).

PB-224 095/8GA PC$6.50/MF$1.45
Metropolitan Washington Council of Governments, D.C.
OPTIMUM GROWTH STUDIES FOR THE METROPOLITAN WASHINGTON AREA. I. OPTIMUM GROWTH: CONSEQUENCES FOR THE YEAR 2000 IN METROPOLITAN WASHINGTON.
Final rept.,
Morton Gorden, Marjorie Ellis, Russell A. Lovell, Jr., Charles N. Flinkstrom, and Philip F. Mulvey.
Aug 73, 90p
Prepared by Development Sciences, Inc., East Sandwich, Mass. See also PB-224 096.

Descriptors: (*Community development, *District of Columbia), (*Urban development, Optimization), Growth, Reviews, Urban areas, Forecasting, Budgeting, Resources, Financing, Community relations, Coordination, Recommendations, Problem solving, Policies.
Identifiers: Optimum urban growth, Washington metropolitan area.

The report is a study of the concepts of 'optimum growth' and 'balanced communities' as they can be applied to the Washington metropolitan area. It begins with an analysis of these terms and postulates that a new consensus will have to be forged if they are to have any utility. A problem analysis and decision making process is proposed to derive the meaning of optimum. This process involves utilization of three 'budgets'--natural resource, fiscal, community response--as a method of weighing the various and sometimes conflicting considerations that must be included in resolution of growth-related problems.

PB-224 096/8GA PC$7.25/MF$1.45
Metropolitan Washington Council of Governments, D.C.
OPTIMUM GROWTH STUDIES FOR THE METROPOLITAN WASHINGTON AREA. II. FISCAL ISSUES IN METROPOLITAN GROWTH.
Final rept.,
Thomas Muller, and Grace Dawson. Aug 73, 104p
Prepared by Urban Inst., Washington, D.C. as Report no. 5010-1. See also PB-224 097.

Descriptors: (*Regional planning, *District of Columbia), (*Financial management, *Urban areas), Reviews, Statistical data, Populations, Central city, Rural urban fringe, Transformations, Community development, Factor analysis, Socioeconomic status, Research, Forecasting, Taxes.
Identifiers: *Urban fiscal issues, Washington metropolitan area.

The report examines fiscal issues involved in metropolitan growth in the Washington area. Jurisdictions in the metropolitan area are classified according to their growth characteristics, and the fiscal structure of the various classifications of jurisdictions is examined. Demographic and socioeconomic characteristics of migrants are analyzed as factors that must be considered in developing approaches to offset negative fiscal effects of growth. Several strategies for neutralizing negative impacts of growth are presented and discussed in terms of their strengths and weaknesses.

PB-224 102/4GA PC$4.75/MF$1.45
Texas Transportation Inst., College Station.
EVALUATION OF THE DATAMATE MODEL D-16 AS A TRAFFIC CONTROLLER.
Research rept.,
Gene P. Ritch. Aug 72, 53p TTI-2-18-72-165-2
Prepared in cooperation with Federal Highway Administration.

Descriptors: (*Freeways, Traffic engineering), (*Ramps, Traffic control), Reliability, Feasibility, Urban transportation, Computers, Data processing, Texas.
Identifiers: Gulf Freeway, Houston(Texas).

A minicomputer system has been installed as the centralized traffic data acquisition and freeway entrance ramp controller at the Gulf Freeway Surveillance and Control Center. The report documents and evaluates the minicomputer system development and operation after one year of freeway ramp control. Emphasis was directed toward the verification of the sensed and calculated freeway traffic data as well as providing programming and operational adjustments to reduce the effects of several deficiencies in the minicomputer system. Cost estimates and the level of effort expended for system implementation are given. (Author)

PB-224 103/2GA PC$3.75/MF$1.45
Texas Transportation Inst., College Station.
STUDY OF TRAFFIC RESPONSIVE RAMP CLOSURE CONTROL.
Research rept.,
William R. McCasland, and Joseph H. Ibanez. Aug 72, 33p TTI-2-18-72-165-11
Prepared in cooperation with Federal Highway Administration.

Descriptors: (*Freeways, Vehicular traffic control), (*Ramps, Control), Counting, Automatic control, Display systems, Traffic engineering.
Identifiers: Ramp metering, Ramp closures.

Ramp metering is effective for improving freeway operations by reducing the traffic input to the freeway. For ramp metering control, there is a minimum rate for vehicles entering the freeway. If the control rate is set below this level, motorists begin to violate the metering signals, and the ramp flow rate is increased. In order to reduce traffic input below the minimum metering rates, positive ramp closures are examined. The results indicate that freeway operation improved, and ramp traffic suffered only minimum added delay. (Modified author abstract)

PB-224 107/3GA PC$8.25/MF$1.45
Oregon State Executive Dept., Salem. Local Government Relations Div.
1985 PRINEVILLE AREA COMPREHENSIVE PLAN, PRINEVILLE, OREGON.
Final rept. 1 Jun 72-31 May 73.
26 Dec 72, 123p LGR-72-10-02
Prepared in cooperation with City of Prineville, and Mitchell/McArthur/Gardner/O'Kane Assoc., Portland, Oreg.

Descriptors: (*Urban planning, *Oregon), Forecasting, Land use, Residential buildings, Waste disposal, Transportation, Parks, Recreational facilities, Demography.
Identifiers: Solid wastes, Prineville(Oregon), Beautification.

The 1985 Prineville area comprehensive plan consists of four major elements: Land use; housing; solid waste disposal; and comprehensive development plan. Special studies under these elements include transportation, parks and recreation, city beautification, monument grid study, and population analysis.

PB-224 108/1GA PC$4.25/MF$1.45
Denver Regional Council of Governments, Colo.
FEASIBILITY OF COMBINED SOLID WASTE AND STORM DRAINAGE PROJECTS.
Final rept.
Jun 72, 43p DRCOG-72-010
Contract HUD-H-1392
Prepared in cooperation with Urban Drainage and Flood Control District, Denver, Colo.

Descriptors: (*Solid waste disposal, Urban planning), (*Surface water runoff, Urban planning), Lagoons(Ponds), Earth fills, Reservoirs, Flood plains, Gravel, Pits(Excavations), Design criteria, Site surveys, Feasibility.
Identifiers: *Denver(Colorado), Sanitary landfills, Storm water runoff.

Combination of solid waste and storm drainage management is examined in this report. Design considerations, several concepts, and prospective locations are analyzed in terms of a demonstration site. Benefits, advantages and disadvantages, and conclusions, and recommendations with respect to the feasibility of detention ponding, adjacent to a sanitary landfill site, using an abandoned gravel pit are discussed. (Modified author abstract)

PB-224 109/9GA PC$8.25/MF$1.45
Denver Regional Council of Governments, Colo.
PLANNING MANUAL FOR STORM DRAINAGE AND FLOOD CONTROL.
Final rept.
Aug 72, 125p DRCOG-72-007
Contract HUD-H-1392
Prepared in cooperation with Urban Drainage and Flood Control District, Denver, Colo.

Descriptors: (*Urban planning, *Colorado), (*Flood control, Urban planning), Systems engineering, Drainage, Storm sewers, Snowmelt, Runoff, Rainfall, Mathematical models, Evaluation, Regional planning.
Identifiers: Denver(Colorado).

The report describes the systems engineering methodology developed and used during Project REUSE for major drainage planning in the Denver region. The methodology is based on the concept of runoff as a material stream flow through eight functions. The functions are used as the basis for analysis, with respect to problem definition, alternative development, evaluation, and preparation of short and long range programs. In addition, the

methodology encompasses the procedures, techniques, and standards for preventive and design master planning of major drainways. Application of the methodology is illustrated by reference to Project REUSE major drainage planning, and development of the proposed twenty-year major drainage program. (Modified author abstract)

PB-224 110/7GA PC$4.00/MF$1.45
Denver Regional Council of Governments, Colo.
MANAGEMENT OF STORM DRAINAGE AND FLOOD CONTROL ACTIVITIES.
Final rept.
Aug 72, 40p DRCOG-72-005
Contract HUD-H-1392
Prepared in cooperation with Urban Drainage and Flood Control District, Denver, Colo.

Descriptors: (*Urban planning, *Colorado), (*Flood control, Urban planning), Systems engineering, Drainage, Storm sewers, Snowmelt, Runoff, Rainfall, Mathematical models, Evaluation, Regional planning, Management engineering, Coordination, selection.
Identifiers: Denver(Colorado).

The report describes major drainage activities, in terms of different roles and responsibilities of elective, planning, and operational/technical management personnel. The management process is also described in terms of assessing the situation, defining the problem, and with respect to the various roles and responsibilities of different levels of management in reaching decisions and implementing programs. Relationships between management responsibility and types of major drainage problems are also discussed. This report is one of a series, relating to urban drainage and flood control, resulting from Project REFUSE (Renewing the Environment through Urban System Engineering). (Author)

PB-224 111/5GA PC$3.00/MF$1.45
Denver Regional Council of Governments, Colo.
MANAGEMENT OF SOLID WASTE ACTIVITIES.
Final rept.
Aug 72, 28p* DRCOG-72-015
Contract HUD-H-1392
Prepared in cooperation with Urban Drainage and Flood Control District, Denver, Colo.

Descriptors: (*Solid waste disposal, *Management planning), (*Urban planning, Solid waste disposal), Regulations, Organization theory, Government policies, Local government, State government, National government, Assessments.
Identifiers: Government services, Denver(Colorado).

This report describes solid waste activities in terms of different roles and responsibilities of elective, planning, operational/technical, and regulatory management personnel. The management process is also described in terms of assessing the situation, defining the problem, and with respect to the various roles and responsibilities of different levels of management in reaching decisions and implementing programs. Relationships between management responsibility and agency functional roles are also discussed. This report is one of a series, related to solid waste management, resulting from Project REUSE (Renewing the Environment through Urban Systems Engineering).

PB-224 113/1GA PC$3.50/MF$1.45
Broome County Planning Board, Binghamton, N.Y.
HOUSING POLICY ALTERNATIVES, VOLUME II, CITY OF BINGHAMTON.
Final rept.
Sep 73, 69p

Descriptors: (*Urban planning, *New York), (*Residential buildings, Urban planning), Market research, Leasing, Prices, Policies, Project planning.
Identifiers: Binghampton(New York).

The publication examines housing policy alternatives for Binghamton's rental market. It is asserted that a series of tax incentive programs would encourage the flow of private capital into Binghampton's housing market and that with proper guidance these additional resources could be channelled into specific problem areas. In addition, local rental data were generated and analyzed in order to gain a more current perspective than 1970 census data can offer. The document will serve as a partial framework for policy makers and as a source document for future housing studies.

PB-224 115/6GA PC$8.25/MF$1.45
Oregon State Executive Dept., Salem. Local Government Relations Div.
OREGON LAND USE PACKAGE.
Final rept. Jun 72-May 73.
Jul 73, 124p

Descriptors: (*Regional planning, *Oregon), (*Land use, Regional planning), Legislation, Objectives, Agriculture, Land use zoning, Building codes, Standards, Reviews, Taxes.

The report includes the land use legislation which was passed by the 1973 Session of the Oregon Legislature. This legislation includes: SB 100--Land use goals: Comprehensive Plans; SB 487--subdivision review; HB 2607--land development consumer protection act; SB 101--farm use zoning and tax deferrals; HB 2965--city planning commission; HB 2548--county planning commission; and SB 73--uniform building code. The report also contains an overview of the legislation and one piece of legislation being carried over from the session for further study. The contents of the report reflect one of the most intensive legislative efforts to preserve land resources in Orgeon's history.

PB-224 116/4GA PC$5.25/MF$1.45
Umpqua Regional Council of Governments, Roseburg, Oreg.
COMPREHENSIVE PLAN FOR THE CITY OF CANYONVILLE, OREGON.
Final rept. Jun 73-78.
Jun 73, 62p URCOG-1 LGR-72-06-01
Prepared in cooperation with Oregon State Executive Dept. Salem.

Descriptors: (*Urban planning, *Oregon), (*Community development, Urban planning), History, Topography, Soils, Urban transportation, Population growth, Land use, Capital, Financing, Project planning, Recommendations.
Identifiers: *Canyonville(Oregon).

The plan describes the intentions of the City of Canyonville's elected and appointed officials with respect to future development. The plan is organized in ten sections: history; study area; topography and soils; transportation; population; present land use; development plan; capital improvements program; recommendations; and appendix sections.

PB-224 117/2GA PC$4.50/MF$1.45
League of Oregon Cities, Salem.
PROCEEDINGS OF THE 1973 NEWLY-ELECTED MAYORS' AND COUNCILMEN'S WORKSHOPS.
Final rept.
May 73, 50p LOC-M/CW-73-01 LGR-72-15-18

Descriptors: (*Urban planning, *Executives), (*Meetings, *Oregon), Proceedings, Public relations, Municipalities, Policies, Management methods, Financing, Recreation, Budgeting, Systems analysis, Public works, Information systems, Services, Parks, State government, Federal budgets, Interpersonal relations.
Identifiers: Mayors, City councilmen, Management information systems, Workshops, Legal responsibilities.

The proceedings contain most of the speeches delivered at four workshops for newly-elected mayors and councilmen of Oregon cities held during February 1973. The speeches delivered at the luncheons appear first for message value. Emphasis of speakers were two: to highlight key items in subject areas that new officials should know; and to know where further resource assistance can be obtained when problems arise.

PB-224 119/8GA PC$4.50/MF$1.45
Hittman Associates, Inc., Columbia, Md.
ASSESSMENT OF SO2 CONTROL ALTERNATIVES AND IMPLEMENTATION PATTERNS FOR THE ELECTRIC UTILITY INDUSTRY.
Mar 73, 145p* HIT-550
Contract OST-40
See also PB-207 108.

Descriptors: (*Electric power plant, Air pollution), (*Air pollution, *Sulfur dioxide), Fuel oil, Desulfurization, Substitutes, Nuclear energy, Supply(Economics), Assessments, Forecasting, Flue gases.
Identifiers: *Air pollution control, Air pollution abatement.

Four cases were investigated with the computer model developed by Hittman Associates to determine the nature of implementation plans for sulfur oxide control at the regional and national levels. In 1975 demand for low sulfur fuels will have exceeded the available supply. The four cases studied will achieve compliance with the state and federal emission regulations by 1986 (one by 1983). All are based on the timely development of solvent refined coal and the availability and utilization of alternative stack gas cleaning and control processes. Control alternatives are summarized and discussed including nuclear power and other advanced energy conversion systems such as hydroelectric and geothermal.

PB-224 121/4GA PC$3.00/MF$1.45
Colorado Univ., Boulder. Molybdenum Project.
PROCESS FOR REMOVING MOLYBDENUM FROM AQUEOUS INDUSTRIAL EFFLUENTS AND FOR REDUCING THE LEVEL OF AVAILABLE MOLYBDENUM IN SOILS IN AREAS OF MOLYBDENUM TOXICITY.
Final rept.,
Donald R. Runnells. 10 Oct 73, 4p
Sponsored in part by National Science Foundation, Washington, D.C.

Descriptors: (*Molybdenum, *Industrial waste treatment), Precipitation(Chemistry), Effluents, Trace elements, Iron chlorides, Water pollution, Arizona.
Identifiers: Copper industry.

The report describes a process for removing molybdenum from aqueous industrial effluents and for reducing the level of available molybdenum in soils in areas of molybdenum toxicity. The experiments were designed to test the removal of molybdenum from actual aqueous effluents from certain copper mines in Arizona.

PB-224 141/2GA PC$3.50/MF$1.45
Boeing Vertol Co., Philadelphia, Pa. Surface Transportation Systems Dept.
URBAN RAPID RAIL VEHICLE AND SYSTEMS PROGRAM.
Annual rept. Jul 72-Jul 73.
Jul 73, 70p* DI74-10021-1 UMTA-IT-06-0026-73-4
Contract DOT-UT-10007
See also report dated Jul 72, PB-212 848.

Descriptors: (*Rapid transit railways, Projects), (*Urban transportation, *Human factors engineering), Public relations, Management planning, Reviews, Tests, Railroad cars, Concepts,

Economic factors, Design, Performance evaluation, Factor analysis.
Identifiers: BART(Bay Area Rapid Transit), SOAC(State of the Art Car), ACT-1(Advanced Concept Train).

The report reviews the second year's efforts of the Urban Mass Transportation Administration's Urban Rapid Rail Vehicle and Systems Program. The objective of the program is to enhance the attractiveness of rail rapid transit to the urban traveler by providing him with transit vehicles that are as comfortable, reliable, safe and economical as possible. Review of the BART prototype testing has been completed. The State-of-the-Art Car (SOAC) was delivered and tested at the High Speed Ground Test Center. The full-scale SOAC mockup has been exhibited in several cities. The design and specification development phase of the Advanced Concept Train (ACT-1) was completed.

PB-224 143/8GA PC$6.25/MF$1.45
Marion County Planning Dept., Salem, Oreg.
COMPREHENSIVE PLAN, STAYTON URBAN AREA: A PLAN FOR COMMUNITY GROWTH AND DEVELOPMENT.
Final rept.
May 73, 82p MAR-CP-73-1
Prepared in cooperation with Mid Willamette Valley Council of Governments, Salem, OR.

Descriptors: (*Urban planning, *Oregon), (*Community development, Urban planning), Urban transportation, Population growth, Land use, Public utilities, Services, Recreational facilities, Recommendations.
Identifiers: *Stayton(Oregon).

The report provides a guide for the growth and development of the Stayton urban area. The information contained within the document consists of an analysis of the various factors and limitations which affect the community's growth. The plan includes data on the early development of the city, soils, geology, population, land use and public facilities. Proposals and recommendations have been made regarding land use, transportation, parks, recreation and open space and urban expansion which reflect decisions and attitudes expressed by the citizens of the community. (Author)

PB-224 147/9GA PC$5.25/MF$1.45
Oregon State Executive Dept., Salem. Local Government Relations Div.
WALLOWA LAKE BASIN COMPREHENSIVE PLAN. TECHNICAL SUPPLEMENT.
Final rept.
May 73, 64p LGR-72-13-02
Prepared by Stevens, Thompson and Runyan, Inc., Portland, Oregon.

Descriptors: (*Regional planning, *Oregon), Wallowa Lake Basin, Land use, Water supply, Sewage, Land use zoning, Ordinances, Recommendations, Drainage, Pollution, Cost estimates, Reviews.
Identifiers: *Wallowa County(Oregon).

The Wallowa Lake Basin comprehensive plan contains a land use plan for long-range development and environmental protection of natural and scenic amenities in the basin area. The land use plan also outlines service areas for provision of public water and sewerage facilities. These services are necessary to public health and safety as well as in preserving the high water quality of Wallowa Lake. The public facilities portion of the plan includes preliminary designs for water and sewer showing general location and type of facilities necessary and cost estimates. Limited development will continue on the south, west, and north side of the lake. A sewer collection system will serve these areas and will connect to the City of Joseph's system. A separate water system will serve the south and west portion of the lake while an improved Joseph water system will serve the north shore area. In light of the land use plan, recommendations for updating the county zoning ordinance have also been suggested. (Author)

PB-224 150/3GA PC$3.25/MF$1.45
Transport and Road Research Lab., Crowthorne(England).
LONG-TERM STRAINS IN A SUPPORT CANTILEVER OF THE CHISWICK-BOSTON MANOR VIADUCT M4,
R. G. Tyler. 1973, 22p TRRL-LR-564

Descriptors: (*Reinforced concrete, Strain measurement), (*Cantilever beams, Reinforced concrete), (*Viaducts, Creep properties), Tensile properties, Heating, Cooling, Shrinkage, Correlation techniques, Great Britain.

Acoustic strain gauges and thermocouples were placed in a reinforced concrete cantilever of the Chiswick-Boston Manot viaduct (M4) during 1964 with a view to providing information on the creep and shrinkage of a normal reinforced concrete construction. Readings have been taken over 5 years following casting. The gauges indicated a strain variation of plus or minus 0.0001 across the section during the setting of the cement. Tensile strain changes occurred on the outside of the cantilever on heating up and on the inside on cooling down. This offers an explanation for the cracking that occurs in large concrete members soon after casting. (Modified author abstract)

PB-224 157/8GA PC$4.50/MF$1.45
System Development Corp., Santa Monica, Calif.
DIAMOND INTERCHANGE TRAFFIC CONTROL. VOLUME 8. USER'S GUIDE FOR COMPUTERIZED TRAFFIC CONTROL PROGRAM.
Final rept.,
W. H. Stone, and T. E. Banks. Jul 73, 47p SDC-TM-4601/013/01 FHWA-RD-73-57
Contract FH-11-7568
See also PB-217 519.

Descriptors: (*Vehicular traffic control, *Computer programming), (*Automatic control, *Interchanges), Man machine systems, Methodology, Real time operations, Teletypewriters, Manuals, Systems engineering, Computer systems programs, Statistical data, Magnetic recording.
Identifiers: Diamond interchanges, Computer aided control systems, Command formats, Message formats.

The report describes the procedures employed by the operator in using a real-time traffic control program for the computerized signal control system which was designed, developed, and implemented at the Western Avenue interchange of the Santa Monica freeway. The operator interface section describes the commands that can be transmitted and be messages that can be received from the computerized system through the teletype unit located at the control center. Operator procedures for starting up the system, initializing, returning the system to the local control (backup) system, and system shutdown are also described. The procedures for recording operational performance statistics are also described.

PB-224 183/4GA PC$4.75/MF$1.45
Tennessee State Planning Office, Jackson. West Tennessee Section.
SUBDIVISION REGULATIONS, TRENTON, TENNESSEE.
Final rept.
Jan 73, 52p TN-TREN-1-73-1006-3

Descriptors: (*Urban planning, *Tennessee), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Trenton(Tennessee).

Subdivision regulations for the City of Trenton, Tennessee consist of a guide for the development of land subdivision in order that the development may be carried out in a proper manner. These regulations shall govern all subdivision of land within the corporate limits of Treton as now or hereafter established and within the Trenton Planning Region established by resolution of the Tennessee State Planning Office.

PB-224 184/2GA PC$6.25/MF$1.45
Tennessee State Planning Office, Nashville.
URBAN BEAUTIFICATION PLAN. CITY OF OAK RIDGE, TENNESSEE.
Jul 73, 85p TN-OAKR-73-1006-2

Descriptors: (*Esthetics, *Urban development), (*Urban planning, *Tennessee), Improvement, Surveys, Inventories, Environments, Objectives, Urban areas, Project planning, Public opinion.
Identifiers: Beautification programs, Oak Ridge(Tennessee).

The Plan has identified and assessed the qualities and resources both natural and man-built, that comprise the overall appearance of the Oak Ridge urban area. Numerous items are noted that contribute to the attractive, or positive, overall characteristics of the area. Five basic concerns are singled out for their negative impact. Through the use of an opinion survey and an interdisciplinary team study, five goals are established to guide in future urban beautification efforts. Taking these goals, an evaluation has been made of five typical problem areas or items, and recommendations are made regarding their beautification or correction.

PB-224 187/5GA PC$5.75/MF$1.45
Tennessee State Planning Office, Johnson City. Upper East Tennessee Section.
OPEN SPACE AND RECREATION PLAN: GREENE COUNTY, TENNESSEE.
Final rept.
Jun 73, 71p TN-GREE-73-1006

Descriptors: (*Recreational facilities, Surveys), (*Regional planning, *Tennessee), Inventories, Socioeconomic status, Demography, Standards, Project planning, Policies, Objectives.
Identifiers: Open space studies, Greene County(Tennessee).

The report includes a detailed inventory and analysis of existing recreation facilities within Greene County. Socio-economic characteristics of the population were investigated. Standards were developed and applied to facilities to determine recreation needs. Goals were formulated and policies developed to achieve implementation. An open space and recreation plan was developed, and an implementation program was established.

PB-224 188/3GA PC$3.75/MF$1.45
Tennessee State Planning Commission, Nashville. Middle Tenessee Office.
ZONING ORDINANCE, ALGOOD, TENNESSEE.
Feb 72, 35p TN-ALGD-4-72-138-1

Descriptors: (*Urban planning, *Tennessee), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Algood(Tennessee).

The purpose of the zoning regulations, districts, and statements is in compliance with Tennessee Enabling Legislation. A list of definitions of terms is included. General provisions which affect all districts are enumerated. The various districts are defined and the various uses and structures permitted in each district are discussed, along with prohibited uses and structures, and minimum space requirements and other developmental standards. Exceptions, modifications, enforcement and the administration of the zoning ordinance by the Board of Zoning Appeals are covered in appropriate depth. The amending process, legal status and validity of the ordinance are explained.

PB-224 189/1GA PC$5.75/MF$1.45
Tennessee State Planning Office, Chattanooga. Southeast Tennessee Section.
BRADLEY COUNTY HISTORIC SITE SURVEY.
Final rept.
Jun 73, 73p TN-BRAC-73-1006
Prepared in cooperation with the Bradley County Regional Planning Commission.

Descriptors: (*Regional planning, *Tennessee), (*Sites, Preservation), Land, Buildings, Surveys, Maps.
Identifiers: Bradley County(Tennessee).

The report is a study of areas and sites within Bradley County which have potential for historic preservation. The sites selected are considered to have substantial background and have been involved in the cultural development of the county to rate historic preservation efforts.

PB-224 190/9GA PC$6.00/MF$1.45
Tennessee State Planning Office, Chattanooga. Southeast Tennessee Section.
HOUSING STUDY: ATHENS, TENNESSEE.
Final rept.
Apr 73, 80p TN-ATHS-73-1006
Prepared in cooperation with Athens Regional Planning Commission.

Descriptors: (*Residential buildings, Surveys), (*Urban planning, *Tennessee), Requirements, Marketing, Economic factors, Constraints, Improvement, Project planning, Legislation, Recommendations.
Identifiers: Athens(Tennessee), Low income housing, Substandard dwellings.

Housing problems in Athens, Tennessee, are identified and analyzed. Local efforts both public and private, to fulfill the housing needs of lower-income families are given particular attention. Local, regional, and national policies and procedures which are obstructions to improved housing and low-income families are enumerated and examined.

PB-224 192/5GA PC$5.50/MF$1.45
Texas Univ., Austin. Center for Highway Research.
A CORRELATION STUDY OF THE MAYS ROAD METER WITH THE SURFACE DYNAMICS PROFILOMETER.
Research rept. Aug 70-Feb 73,
Roger S. Walker, and W. Ronald Hudson. Feb 73, 70p CFHR-3-8-71-156-1
Prepared in cooperation with Federal Highway Administration, Washington, D.C.

Descriptors: (*Pavements, *Service life), (*Roads, Surface roughness), (*Profilometers, Comparison), Evaluation, Correlations, Recommendations, Road tests, Methodology, Mathematical models, Regression analysis, Highways, Texas.
Identifiers: *Mays road meters.

A correlation study of roughness measurements obtained with the Mays road meter (MRM) and the surface dynamics profilometer (SDP) has been made and is reported. In accordance with information obtained from this study, a tentative set of calibration, operation, and control procedures has been developed for the MRM to provide a means of obtaining roughness measurements for Texas highways in terms of service-ability index. Several MRM's which have been calibrated and for which the results have been reported according to these procedures are currently in field use by the Texas Highway Department.

PB-224 195/8GA PC$4.75/MF$1.45
South Alabama Regional Planning Commission, Mobile.
HOUSING DEVELOPMENT PROGRAM. PHASE III.
Final rept. Jul 72-Jun 73.
30 Jun 73, 172p CPA-AL-04-09-1016-6
See also report dated Jun 72, PB-210 784.

Descriptors: (*Residential buildings, Regional planning), (*Regional planning, *Alabama), Demand(Economics), Factor analysis, Sites, Land development, Inventories, Project planning, Marketing, Demography, Statistical data.
Identifiers: Mobile homes, County planning, Local planning.

A study is made of the demand for housing within the South Alabama Region. The analysis includes a discussion of the factors of demand recognized. A brief discussion is given of housing site development and costs. A report of committee activities in regard to a simplified system for local grading the housing inventory is followed by an outline of strategy for regional housing development.

PB-224 199/0GA PC$5.00/MF$1.45
Tennessee State Planning Commission, Jackson. West Tennessee Office.
ZONING ORDINANCE FOR TRENTON, TENNESSEE.
Final rept.
Jun 72, 58p TN-TREN-6-72-138-2

Descriptors: (*Urban planning, *Tennessee), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: Trenton(Tennessee).

The ordinance is an implementing device for the recently completed Land Use Plan for Trenton, Tennessee. Its purpose is to promote the health, safety, morals, and general welfare of the community.

PB-224 200/6GA PC$9.25/MF$1.45
Kerr-Tar Regional Council of Governments, Henderson, N.C.
DEVELOPMENT CODES STUDY. DEVELOPMENT CODE ANALYSIS AND CODE ADMINISTRATION AND ENFORCEMENT STUDY.
Final rept.
Jul 73, 142p KTRCOG-73-2
Report on HUD 701 Non Metropolitan Planning Assistance Program. Prepared in cooperation with North Carolina State Dept. of Administration, Raleigh. State Planning Div.

Descriptors: (*Land use zoning, *North Carolina), (*Building codes, *Regional planning), Regulations, Reviews, Recommendations, Plumbing, Electrical codes, Residential buildings, Improvement.
Identifiers: Kerr Tar region(North Carolina), Subdivision regulations.

An analysis is made of all zoning and subdivision regulations in the Kerr-Tar Region and all building, plumbing, electrical and housing codes with suggestions and recommendations for improvement.

PB-224 201/4GA PC$10.00/MF$1.45
Enviroamental Protection Agency, Cincinnati, Ohio. Office of Water Program Operations.
FRESHWATER BIOLOGY AND POLLUTION ECOLOGY: TRAINING MANUAL,
Ralph M. Sinclair. Apr 73, 546p* EPA-430/1-73-006

Descriptors: (*Freshwater biology, *Manuals), (*Water pollution, Manuals), Ecology, Aquatic plants, Algae, Aquatic animals, Bacteria, Fungi, Water quality, Bioassay.
Identifiers: Water pollution effects(Animals), Water pollution effects(Plants).

This manual is designed to supplement lectures in aquatic biology and pollution ecology. Division is into two main sections, a survey of the freshwater biota and freshwater pollution ecology. The major subheadings include introduction to the biota and the environment, producers, consumers, reducers, effect of water quality on organisms, water quality criteria, current pollution problems, and biological methods and techniques.

PB-224 213/9GA PC$9.50/MF$1.45
Kerr-Tar Regional Council of Governments, Henderson, N.C.
OVERALL PROGRAM DESIGN.
Final rept.
Jul 73, 149p KTRCOG-73-3
See also PB-224 217.

Descriptors: (*Regional planning, *North Carolina), Community development, Economic development, Residential buildings, Financial management, Local government.

The document identifies the goals and objectives of the Kerr-Tar Regional Council of governments and represents a work program for fiscal years 1974, 1975 and 1976 to guide the Council of Governments staff in working toward its objectives.

PB-224 216/2GA PC$3.00/MF$1.45
Atlanta City Planning Dept., Ga.
THE VALUE OF NEIGHBORHOOD PLANNING. ATLANTA'S COMPREHENSIVE PLAN.
Interim rept.
Jun 73, 19p

Descriptors: (*Urban planning, *Georgia), (*Neighborhoods, Urban planning), Planning, Land use, Transportation, Economic factors, Community development, Recreation, Natural resources.
Identifiers: Atlanta(Georgia).

The booklet tells the reader about the Atlanta Comprehensive Planning Process, indicates the value of comprehensive planning and underscores the importance of city neighborhoods to prepare comprehensive plans. The basic steps followed in making and carrying out a comprehensive plan are also described.

PB-224 217/0GA PC$8.25/MF$1.45
Kerr-Tar Regional Council of Governments, Henderson, N.C.
REGIONAL GROWTH MANAGEMENT PLAN - MODEL REGIONAL AND NEW COMMUNITY PLANNING PROGRAM.
Final rept.
Jul 73, 121p KTRCOG-73-1
See also PB-224 213.

Descriptors: (*Regional planning, *North Carolina), Planning, Community development, Local government, Land use, Transportation, Residential buildings, Education.
Identifiers: Soul City(North Carolina).

The document provides an overall framework for planning in the Region by formulating a strategies plan for managing the region's growth and development including the new community, Soul City.

PB-224 218/8GA PC$8.50/MF$1.45
Tennessee State Planning Office, Chattanooga. Southeast Tennessee Section.
RHEA COUNTY, TENNESSEE: POPULATION STUDY, ECONOMIC STUDY, EXISTING LAND USE ANALYSIS, LAND USE PLAN.
Final rept.
Apr 73, 127p TN-RHEC-73-1006
Prepared by Rhea County Regional Planning Commission.

Descriptors: (*Regional planning, *Tennessee), Populations, Economic analysis, Land use, Manpower.
Identifiers: *Rhea County(Tennessee).

The document contains analyses of the population, economy, and land use. County goals and standards of development are defined, population and labor force projections are developed, and a land use plan was prepared.

PB-224 242/8GA PC$7.25/MF$1.45
General Environments Corp., Springfield, Va.
A STUDY OF EMISSIONS FROM 1966-1972 LIGHT-DUTY VEHICLES IN WASHINGTON, D.C.,
A. R. Martin, and R. A. Herrick. 7 Jul 73, 105p
APTD-1506
Contract EPA-68-01-0454

Descriptors: (*Air pollution, *Exhaust gases), Carbon dioxide, Carbon monoxide, Hydrocarbons, Nitrogen oxides, Data processing, District of Columbia, Automobiles, Chemical analysis.
Identifiers: Automobile exhaust, *Emission factors.

As part of the 1972 Emission Factors Program (Six Cities Program), one hundred and seventy privately owned passenger vehicles from the Metropolitan Washington, D.C. area were tested for exhaust emission levels of carbon monoxide, carbon dioxide, hydrocarbons and oxides of nitrogen according to the 1975 Federal Test Procedure. Testing of vehicles included both cold and hot start cycles. The test results were then used to calculate emission factors based on both the 1972 and 1975 Federal Test Procedures. (Modified author abstract)

PB-224 251/9GA PC$6.75/MF$1.45
Bureau of Mines, Bartlesville, Okla. Bartlesville Energy Research Center.
ALDEHYDE AND REACTIVE ORGANIC EMISSIONS FROM MOTOR VEHICLES. PART I. ADVANCED AUTOMOTIVE CONTROL SYSTEMS VEHICLES.
Final rept.
Mar 73, 92p APTD-1568a
See also PB-224 252.

Descriptors: (*Aldehydes, Exhaust gases), (*Exhaust gases, Sampling), (*Automobile engines, *Air pollution control), (*Hydrocarbons, Exhaust gases), Tables(Data), Carbon monoxide, Nitrogen oxides, Temperature, Fuels, Catalytic converters, Alkene hydrocarbons, Thermal reactors.

Aldehyde and reactive organic emissions as well as carbon monoxide and oxides of nitrogen emissions from automobiles equipped with various types of advanced prototype emission control systems including both catalytic and thermal reactor type systems were measured. The aim was to characterize aldehyde and reactive organic emissions from vehicles with prototype advanced emission control systems to provide data necessary to help determine if there is a need for aldehyde and/or reactive organic motor vehicle regulations, and to determine on a preliminary basis, the effect of ambient temperature on the emission characteristics of advanced emission control systems. (Modified author abstract)

PB-224 252/7GA PC$4.50/MF$1.45
Bureau of Mines, Bartlesville, Okla. Bartlesville Energy Research Center.
ALDEHYDE AND REACTIVE ORGANIC EMISSIONS FROM MOTOR VEHICLES. PART II. CHARACTERIZATION OF EMISSIONS FROM 1970 THROUGH 1973 MODEL VEHICLES.
Final rept.
Mar 73, 50p APTD-1568b
See also PB-224 251

Descriptors: (*Aldehydes, Exhaust emissions), (*Exhaust emissions, Sampling), (*Automobile engines, *Air pollution control), (*Hydrocarbons, Exhaust emissions), Tables(Data), Carbon monoxide, Nitrogen oxides, Fuels, Catalytic converters, Alkene hydrocarbons, Thermal reactors.

Aldehyde and reactive organic emissions as well as carbon monoxide and oxides of nitrogen emissions were measured from 1970 through 1973 model vehicles. The aim was to characterize such emissions and to provide data to compare exhaust hydrocarbon reactivity for exhaust from 1970 through 1973 vehicles with that of exhaust from prototype low-emission systems. (Modified author abstract)

PB-224 266/7GA PC$4.25/MF$1.45
Environmental Protection Agency, Cincinnati, Ohio. Office of Water Program Operations.
SELECTION AND OPERATION OF SMALL WASTEWATER TREATMENT FACILITIES - TRAINING MANUAL,
Charles E. Sponagle. Apr 73, 117p* EPA-430/1-73-005

Descriptors: (*Sewage treatment, *Manuals), Education, Packaged sewage treatment, Septic tanks, Industrial plants, Water pollution, Maintenance.
Identifiers: *Sewage treatment plants, Physical chemical treatment.

The training manual consists of a series of outlines used as a base of instruction. Subjects covered include characteristics of the water environment; pollution from municipal and industrial sources; methods of wastewater treatment; consideration of specific types of small treatment plants, including septic tanks, package plants, and lagoons; and control tests, sampling, and inspections associated with maintaining effective treatment plant operation.

PB-224 287/3GA PC$5.75/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
PARKS AND OPEN SPACE/NATURAL RESOURCES IN THE TAMPA BAY REGION.
Final rept.
30 Jun 73, 75p TBR-73-5-PR

Descriptors: (*Regional planning, *Florida), (*Parks, Regional planning), Natural resources, Recreational facilities, Land development, Tampa Bay.

The development of the region's open spaces is one of the more perplexing problems facing us today. Utilization of a portion of this space for recreational pursuits is needed to maintain the aesthetic, cultural and physical nature of both the region and the individual. To that end, the study assesses the resource-oriented recreational potential in the region. This potential is derived from the natural resource base and the existing facilities. When land development trends are set, the presence of vast open space areas can mislead officials to consider recreational open space as a luxury, to be put off until a full developed community can afford it. The findings of the study indicate that this assumption is invalid and presents the economic impact that effective planning for recreational open space can provide. Finally, the report analyzes the existing and projected demand for recreational open space facilities and establishes a performance planning range to gauge the effectiveness of planning and development in meeting the goals of the region.

PB-224 288/1GA PC$6.25/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
2000 PLAN OF DEVELOPMENT.
Final rept.
30 Jun 73, 84p TBR-73-7-CP

Descriptors: (*Urban planning, *Florida), Recommendations, Population growth, Residential buildings, Economic development, Parks, Land use, Water quality, Urban transportation, Policies.
Identifiers: *Saint Petersburg(Florida).

The document summarizes the findings and recommendations of the integral elements of the 2000 Plan--population, housing, economic strategies, natural resources/parks and open space, land use, water quality management, and transportation. Further, the goal and objectives for each plan element with the assumptions, policies and strategies are presented. Also contained in the document is an overview of the plan process, alternative plan development options, the plan of development for the year 2000 and recommendations for implementation of the plan.

PB-224 289/9GA PC$4.00/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
HOUSING / 1972-73 COMPREHENSIVE PLAN SERIES, CITY OF DUNEDIN, FLORIDA.
Feb 73, 37p LPA-73-4-HG-3
Prepared by Dunedin Dept. of Planning, Fla.

Descriptors: (*Urban planning, *Florida), (*Residential buildings, Urban planning), Surveys, Objectives, Planning, Recommendations.
Identifiers: Dunedin(Florida).

The study explores and evaluates the extent of the housing problem. Major housing characteristics were reviewed and analyzed. Current related planning activities were also documented and recommendations for further action, including housing development goals and objectives were formulated. Interviews were conducted with knowledgable business and governmental officials locally, county-wide and within the Tampa Bay, Region.

PB-224 290/7GA PC$6.75/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
1973 HOUSING STUDY, MANATEE COUNTY, FLORIDA.
Final rept.
30 Jun 73, 92p LPA-73-4-HG-4

Descriptors: (*Regional planning, *Florida), (*Residential buildings, Regional planning), Surveys, Neighborhoods, Recommendations, Planning.
Identifiers: *Manatee County(Florida).

The report reviews housing trends, local preferences and housing types. It offers a graphic display of structural conditions by neighborhood planning areas. The study is concluded with various possible strategies - each aimed at improving the housing supply and/or housing issues resulting from the economic and social history of the community.

PB-224 306/1GA PC$11.75/MF$1.45
Metropolitan Washington Council of Governments, D.C.
METROPOLITAN WATER RESOURCE CAPITAL IMPROVEMENTS 1973-78.
Final rept.
Apr 73, 191p

Descriptors: (*Urban planning, *District of Columbia), (*Water resources, Urban planning), Management, Water supply, Sewage treatment, Policies.

This report updates COG's 'Water and Sewerage Plan and Program, 1971-72.' It summarizes current metropolitan water resource planning policies and relates locally programmed capital improvements to land use and functional goals, objectives and criteria.

PB-224 307/9GA PC$6.75/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
MAJOR THOROUGHFARE PLAN, PASCO COUNTY, FLORIDA, 1995.
Final rept.
Mar 73, 95p LPA-73-TR-2
Prepared by Barr, Dumlop and Associates, Inc., and Community Sciences, Inc.

Descriptors: (*Regional planning, *Florida), (*Transportation, Regional planning), Population growth, Streets, Highways, Traffic engineering, Revenue, Taxes, Financing, Cost analysis.
Identifiers: *Pasco County(Florida).

The report is concerned with the magnitude and immediacy of highway transportation problems in Pasco County. The population distribution within the county and the travel related thereto are presented for the base year (1972) and are projected to 1995. The present population of approximately 100,000 persons is expected to increase to 324,000 by 1995. Much of this growth is already occuring along the U.S. Highway 19 corridor on the West Coast. A $1.67 million major highway program is presented with designated five-year priorities. Included are U.S. Highway 19 improvements and a proposed north-south freeway approximately three miles east of U.S. Highway 19. Sources of implementation funds are estimated to yield $192 million, indicating a reasonable, achievable program.

PB-224 308/7GA PC$4.75/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
INITIAL HOUSING ELEMENT: PLANT CITY, FLORIDA.
Final rept.
Feb 73, 55p LPA-73-4-HG-1
Prepared by Martin Smith Associates, Inc.

Descriptors: (*Urban planning, *Florida), (*Residential buildings, Urban planning), Demand(Economics), Supply(Economics), Policies, Income, Population growth, Project planning.
Identifiers: *Plant City(Florida).

The initial housing element includes analysis of the general housing conditions in Plant City and specific factors contributing to housing problems. A projected housing supply to the year 1985 is included with yearly totals of the number of units to be added and removed. The report sets forth recommended goals and policies for the institution of a continuing housing program. A five year recommended program for the years 1973-1977 is included.

PB-224 309/5GA PC$7.75/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
ADMINISTRATIVE STUDY AND CODES REVIEW, SAFETY HARBOR PLANNING AREA.
Final rept.
Apr 73, 113p LPA-73-9-MC-2
Prepared by Milo Smith Associates, Inc., Tampa Fla.

Descriptors: (*Urban planning, *Florida), Municipalities, Land use zoning, Management, Local government.
Identifiers: *Safety Harbor(Florida).

The Administrative study of Codes Review for Safety Harbor reviews and suggests improvements in City administration to facilitate plan implementation and proposes a zoning ordinance text and new subdivision regulations to replace current regulations. The Review outlines the functions, duties, and responsibilities of the various boards, commissions, and officials needed to carry out the planning program.

PB-224 310/3GA PC$3.25/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
CAPITAL IMPROVEMENTS PROGRAM AND BUDGET, SAFETY HARBOR PLANNING AREA.
Final rept.
Apr 73, 25p LPA-73-9-MC-3
Prepared by Milo Smith Associates, Inc., Tampa, Fla.

Descriptors: (*Urban planning, *Florida), Capital, Project planning, Budgeting, Financing, Revenue.
Identifiers: *Safety Harbor(Florida).

The capital improvements program and budget identifies and recommends priorities for the various public improvements proposed in the community development report and recommends methods of financing these improvements. The study serves as an evaluative basis for making and coordinating the city's annual budgetary requests and decisions in terms of long-range needs.

PB-224 311/1GA PC$3.50/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
MNAATEE COUNTY LAND-USE STUDY. 1973.
Final rept.
30 Jun 73, 27p LPA-73-2-LU-6

Descriptors: (*Regional planning, *Florida), (*land use, Regional planning), Residential buildings, Commercial buildings, Industrial buildings, Public land, Recreational facilities, Parks, Agriculture.
Identifiers: *Manatee County(Florida).

The objective of the report is to provide a graphic and quantitative description of present physical uses of land west of Range Line 18 East in unincorporated Manatee County. Based upon a detailed inventory, it generalizes amounts of land in major use types in such a manner that it can be easily understood by public and private decision makers.

PB-224 312/9GA PC$8.25/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
POPULATION: A COMPREHENSIVE ANALYSIS FOR THE TAMPA BAY REGION.
Final rept.
30 Jun 73, 124p TBR-73-3-PN

Descriptors: (*Regional planning, *Florida), (*Populations, Regional planning), Census, Education, Natural resources, Land use, Transportation, Tampa Bay.
Identifiers: *Tampa Bay Region.

The report is an update of the population data base for an enlarged region including Pasco County. A review and analysis of existing population, primarily from the 1970 Census of Population, is performed through comparison of various geographic areas. Future population growth is projected by five year intervals to the year 2000 for the region, its counties, and Minor Civil Divisions. A forecast of population by components (permanent, occassional and tourist) is presented as an appendix. Finally, consideration of a growth policy for the Tampa Bay Region and its component jurisdictions reviews the effect of population on the total regional environment, social and physical, and researches alternative approaches to growth policy as well as growth control methods and techniques.

PB-224 313/7GA PC$5.00/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
AGGREGATE HOUSING MARKET ANALYSIS: TAMPA BAY REGION.
Final rept.
30 Jun 73, 56p TBR-73-4-HG

Descriptors: (*Regional planning, *Florida), (*Residential buildings, Regional planning), Market research, Economic factors, Marketing, Demand(Economics), Supply(Economics).
Identifiers: *Tampa Bay Region.

The report seeks to fill the gap between state and local housing programs by providing a market analysis at the regional level. In preparing the report the Tampa Bay Regional Planning Council staff has inventoried the existing housing stock at the county level and then aggregated these inventories to provide a single inventory for the Tampa Bay Region. The report also seeks to provide regional projections of housing needs to the year 2000. In deriving these projections, it was necessary to analyze past and current trends in a variety of housing market supply and demand factors in order to determine their probable effect on the production and absorbtion of additional housing. Finally, the report also addresses certain individual group needs--e.g. low and moderate income housing, minority housing and the housing needs of the elderly--and presents a report on the feasibility of adopting a new town policy for the region.

PB-224 314/5GA PC$7.25/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
PLAN OF DEVELOPMENT, PLANT CITY, FLORIDA. 1985.
Final rept.
Apr 73, 101p LPA-73-7-CP-1
Prepared by Martin Smith Associates, Inc.

Descriptors: (*Urban planning, *Florida), (*Community development, Urban planning), Land use, Population growth, Recommendations, Streets, Traffic engineering, Parks, Recreation, Schools, Public buildings.
Identifiers: *Plant City(Florida).

The report presents a comprehensive plan of development for Plant City, FL. Sub-elements presented are a land use plan, a major thoroughfare plan, and a community facilities plan. Specific recommendations for needed improvements are included. The plan anticipates a 1985 population of 19000 persons.

PB-224 318/6GA PC$6.00/MF$1.45
Birmingham Regional Planning Commission, Ala.
COMPREHENSIVE PLAN, JASPER, ALABAMA.
Final rept.
Jun 73, 80p ALA-BRP-0380-1020-3

Descriptors: (*Urban planning, *Alabama), Forecasting, Demography, Land use, Economic development, Facilities, Streets, Residentail buildings, Public works, Environmental engineering.
Identifiers: *Jasper(Alabama).

The Comprehensive Plan for Jasper outlines recommendations for orderly and efficient patterns of growth for the city in the future. Based on existing socio-economic conditions, land use patterns, community facilities, transportation networks, and housing conditions, projections are made for the development of Jasper to 1990.

PB-224 321/0GA PC$3.25/MF$1.45
Birmingham Regional Planning Commission, Ala.
INITIAL HOUSING ELEMENT, PLEASANT GROVE, ALABAMA.
Final rept.
Jun 73, 21p ALA-BRP-0380-1020-01

Descriptors: (*Urban planning, *Alabama), (*Residential buildings, Urban planning), Standards, Land use, Inventories.
Identifiers: *Pleasant Grove(Alabama).

The initial housing element attempts to provide a basis for a continuing housing program for Pleasant Grove by surveying existing housing conditions and outlining steps to provide an adequate supply of housing for the residents of Pleasant Grove, AL.

PB-224 323/6GA PC$8.50/MF$1.45
Alabama Development Office, Montgomery.
EVALUATION OF COMPREHENSIVE PLAN, DEMOPOLIS, ALABAMA.
Final rept.

Jun 73, 128p ALA-PSI-0485-1020-01
Prepared by Public Systems, Inc., Huntsville, Ala.

Descriptors: (*Urban planning, *Alabama), Community development, Objectives, Recommendations, Assessments, Evaluation.
Identifiers: *Dempolis(Alabama).

The report represents an assessment of the comprehensive planning documents prepared for the use of the city of Demopolis, AL. This report is directed at determining the usefullness of the planning documents to the city administration, the extent to which the plans have been implemented to date, and the impact of planned development activities on the Demopolis community. (Author)

PB-224 324/4GA PC$5.75/MF$1.45
East Alabama Regional Planning and Development Commission, Anniston.
SKETCH DEVELOPMENT PLAN FOR LAFAYETTE, ALABAMA.
Final rept.
Jun 73, 73p ALA-EAR-1000-1020-02

Descriptors: (*Urban planning, *Alabama), Economic analysis, Natural resources, Land use, Health, Education, Police, Fire protection, Roads, Recreation.
Identifiers: *Lafayette(Alabama).

The objective of the plan is to prerform an inventory and analysis of the community. From this, a program of planning-related activities are designed to insure orderly or well-directed growth and development. (Modified author abstract)

PB-224 325/1GA PC$4.25/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
OVERALL PROGRAM DESIGN, 1972-76, CITY OF DUNEDIN, FLORIDA.
Dec 72, 41p LPA-73-7-CP-4
Prepared by Dunedin Dept. of Planning, Fla.

Descriptors: (*Urban planning, *Florida), Project planning, Objectives, Commerce, Industries, Residential buildings, Services, Recreational facilities, Public utilities, Urban transportation.
Identifiers: *Dunedin(Florida).

The initial design provides the framework for conducting a meaningful long-range municipal planning program which reflects the particular needs and objectives of the city of Dunedin. The design includes identification of major problems and opportunities, development goals and objectives, a proposed three year program and a immediate detailed proposed work program for 1973-74, and description of the planning and management organization and procedures necessary to accomplish the tasks.

PB-224 326/9GA PC$4.25/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
LAND USE PLAN. SAFETY HARBOR PLANNING AREA, SAFETY HARBOR, FLORIDA.
Mar 73, 41p LPA-73-2-LU-3
Prepared by Milo Smith and Associates, Inc., Tampa, Fla.

Descriptors: (*Urban planning, *Florida), Land use, Objectives, Residential buildings, Streets, Standards, Policies.
Identifiers: *Safety Harbor(Florida).

The Safety Harbor land use plan sets forth a desirable spatial arrangement of the various land use categories necessary to sustain Safety Harbor's needs by 1990. The land use plan provides guidelines for future land utilization by establishing policies, standards, and criteria by which future development should take place. The intent of the land use plan is to establish an overall framework in which economic forces and desires can be balanced and integrated to best utilize the area's resources.

PB-224 327/7GA PC$4.50/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
PLANT CITY LAND USE 1972.
Final rept.
Oct 72, 46p LPA-73-2-LU-1
Prepared by Hillsborough County Planning Commission, Tampa, Fla.

Descriptors: (*Urban planning, *Florida), (*Land use, Urban planning), Residential buildings, Commercial buildings, Industrial buildings, Soils.
Identifiers: *Plant City(Florida).

The report is a land use inventory for 1972 for Plant City, FL. A land use comparison for 1960-67 is included for future planning purposes.

PB-224 328/5GA PC$3.75/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
COMMUNITY FACILITIES PLAN.
Mar 73, 34p LPA-73-9-MC-4
Prepared by Milo Smith Associates, Inc., Tampa, Fla.

Descriptors: (*Urban planning, *Florida), (*Community development, Urban planning), Public buildings, Public utilities, Services, Parks, Recreational facilities, School buildings, Libraries.
Identifiers: *Safety Harbor(Florida).

The Safety Harbor community facilities plan develops a program for providing and extending the required community facilities through 1990, in the most economical and efficient manner possible. The plan compiles information and evaluates present facilities and services in terms of need and accepted state and national standards. This information is coordinated with other findings of the comprehensive plan and serves as a basis for scheduling and financing future capital improvements.

PB-224 330/1GA PC$3.75/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
DEVELOPMENT STANDARDS AND DESIGN CRITERIA, MANATEE COUNTY, FLORDIA.
Final rept.
Apr 73, 33p LPA-73-7-CP-6
Prepared by Milo Smith Associates, Inc., Tampa, Fla.

Descriptors: (*Regional planning, *Florida), Land use zoning, Natural resources, Regulations, Neighborhoods.
Identifiers: *Manatee County(Florida).

The report discusses the County's policies, goals, and objectives and provide a basis for the proposed land use and development regulations as well as the land use plan. General location and development standards and guidelines and design criteria further provide a basis for evaluating existing and proposed land use and development in terms of community goals and desirable models established by custom, usage, and general consent.

PB-224 331/9GA PC$6.50/MF$1.45
Central Alabama Regional Planning and Development Commission, Montgomery.
THE POPULATION AND ECONOMY OF PRATTVILLE, ALABAMA.
Final rept.
Jun 73, 86p ALA-CAP-1415-1020-01
See also PB-224 332.

Descriptors: (*Urban planning, *Alabama), Populations, Economic analysis, Education, Mobility, Employment, Income.
Identifiers: Prattville(Alabama).

The study includes an analysis of domographic and economic characteristics of the city. Furthermore, the study includes projections of population and economic growth in the study area for the planning period 1973-2000. (Author)

PB-224 332/7GA PC$10.00/MF$1.45
Central Alabama Regional Planning and Development Commission, Montgomery.
PRATTVILLE, ALABAMA--GOVERNMENTAL MANAGEMENT STUDY.
Final rept.
Jun 73, 156p ALA-CAP-1415-1020-04
See also PB-224 331.

Descriptors: (*Urban planning, *Alabama), Local government, Management engineering, Participative management, Financial management, Projects.
Identifiers: Prattville(Alabama).

The study includes an analysis of management of the Prattville, Alabama government. The study also includes, ways for systematically viewing both planning and management as continuous processes. (Author)

PB-224 338/4GA PC$12.25/MF$1.45
Alabama Development Office, Montgomery.
ALABAMA PLANNING HANDBOOK,
William H. Wallace, Jr., and Walter B. Stevenson, Jr. Jun 73, 205p ALA-ADO-X996-1020-03

Descriptors: (*Regional planning, *Alabama), (*Handbooks, State government), (*Urban planning, Alabama), Municipalities, Urban areas, Regions, Local government.

One of the most unplanned aspects of local government is the haphazard manner in which cities and counties embark on a comprehensive planning process. In recent years an increasing number of municipalities and higher levels of government (counties and state) have expressed an interest in comprehensive planning. Towns, cities, counties, and regions, therefore, need to be informed about planning, its benefits, and the legal procedures available for implementing a sound comprehensive planning process. Recognizing this need, the State Planning Division of the Alabama Development Office has prepared the manual for the benefit of Alabama municipalities, counties and regions that are interested in comprehensive planning. Hopefully, it will provide information and assistance in the establishment of a comprehensive planning process. The manual is concerned with planning on three levels - municipal, county, and regional. The purpose is to present local governments with an insight into the scope and obligations of a comprehensive planning process. (Author)

PB-224 339/2GA PC$3.25/MF$1.45
Alabama Development Office, Montgomery.
STUDY OF WATER QUALITY PREDICTION MODELS FOR USE IN ALABAMA.
Final rept.,
Joe Miller Morgan, and Brain A. Rindt. Feb 73, 25p ALA-AU-X996-WRC-72-b
Prepared by Auburn Univ., Ala. Report on the Comprehensive Planning for Water and Related Land Resources in Alabama Series.

Descriptors: (*Water quality, Mathematical models), (*Alabama, *Water pollution), Dissolved gases, Oxygen, River basin development.

The literature relating to stream water quality modeling was surveyed with the goal of selecting one or more such models that could be applied to Alabama rivers within a short time frame. Since organic loading and dissolved oxygen appear to have been established as the most important indicators of stream water quality only models dealing with those parameters were considered. (Modified author abstract)

PB-224 341/8GA PC$8.00/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
ECONOMIC STRATEGIES TAMPA BAY REGION.
Final rept.
May 73, 120p TBR-73-10-ES-1
Prepared by Eric Hill Associates, Inc., Jacksonville, Fla.

Descriptors: (*Regional planning, *Florida), (*Economic analysis, Regional planning), Economic development, Projection. Manpower, Transportation, Tampa Bay.

The report outlines broad economic strategies for the Tampa Bay Region. It also points out significant trends, develops economic growth and projections, and presents an analysis of growth alternatives for the Region.

PB-224 342/6GA PC$8.50/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
FIRST PHASE: PROPOSED LAND USE AND DEVELOPMENT REGULATIONS, MANATEE COUNTY, FLORIDA.
Final rept.
Apr 73, 130p LPA-73-2-LU-4
Prepared by Milo Smith Associates, Inc., Tampa, Florida.

Descriptors: (*Regional planning, *Florida), (*Land use zoning, Ordinances), Regulations, Standards, Boundaries, Residential buildings, Licenses, Parking facilities, Objectives, Penalties, Streets, Right of way acquisition.
Identifiers: *Manatee County(Florida).

The proposed land use and development regulations (Zoning ordinance and subdivision regulations revision) for Manatee County provide the basis for legally establishing guidelines and minimum standards for implementing the recommendations and proposals contained in the county's comprehensive plan, particularly the policies, goals, and objectives element and the development standards and design criteria element. The proposed regulations contain provisions regarding the use of land, the density of development, the location and use of buildings, the bulk, height and lot coverage of structures, off-street parking and loading regulations, and subdivision plat design, approval, improvements, and administrative procedures.

PB-224 343/4GA PC$5.25/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
CITIZEN PARTICIPATION: COMPREHENSIVE PLAN SERIES. 1972/73.
Dec 72, 64p LPA-73-8-CZ-1
Prepared by the Dunedin City Dept. of Planning, Fla.

Descriptors: (*Urban planning, *Florida), (*Participative management, *Urban development), Public relations, Evaluation, Roles(Behavior), Interviews, Questionnaires, Recommendations, Decision making, Organizations, Mass media.
Identifiers: *Citizen participation, *Dunedin(Florida).

The initial citizen participation work element of the Dunedin 1972-73 comprehensive planning work program identifies the characteristics of the citizen and evaluates his role in the planning and decision-making process of local government. Major issues and recommendations for action are presented. Community goals and objective statements and mechanisms for furthering citizen involvement in meaningful ways are recommended. Interviews were conducted with representatives of local civic, fraternal, and religious organizations as well as with individual citizens, city officials, and the news media. A questionnaire was also developed.

PB-224 344/2GA PC$5.00/MF$1.45
East Alabama Regional Planning and Development Commission, Anniston.
INITIAL HOUSING ELEMENT, LAFAYETTE, ALABAMA.
Final rept.
Feb 73, 56p ALA-EAR-1000-1020-01

Descriptors: (*Urban planning, *Alabama), (*Residential buildings, Urban planning), Economic factors, Buildings, Value, Leasing, Building codes, Projects.
Identifiers: *Lafayette(Alabama), Chambers County(Alabama).

The report discusses and evaluates housing conditions within the city. It is hoped that the survey will serve as a tool to help the city alleviate present housing problems, as well as stimulate enthusiasm toward ridding the community of unsightly neighborhoods. (Author)

PB-224 345/9GA PC$16.25/MF$1.45
Alabama Univ., University. Natural Resources Center.
A SYNTHESIS OF ECONOMIC AND WATER QUALITY PROJECTIONS IN ALABAMA RIVER BASINS, 1970-2020.
Final rept.,
William Gunther, Candie McKay, and James Park.
Jun 73, 283p ALA-NRC-X996-WRC-73-2
Prepared in cooperation with Alabama Development Office, Montogomery.

Descriptors: (*River basins, Water quality), (*Water quality, *Alabama), Economic development, Water quality, Demography, Growth, Water pollution, Industrial relations, Projection, Management planning, Oxygen, Computer programs, Forecasting, Regional planning.
Identifiers: Dissolved oxygen.

The report provides a consistent set of demographic, economic, and water quality projections for each of twelve river basins in Alabama. It focuses on projecting the impact of future growth on the dissolved oxygen levels at selected critical points as an indication of water quality for the basin. Estimates are made decennially, 1970-2020. The report ranks the basins according to the expected degree of pollution over the study period.

PB-224 347/5GA PC$4.50/MF$1.45
Urban Consultants, Inc., Montgomery, Ala.
HOUSING REPORT FOR THE STATE OF ALABAMA.
Final rept.,
Leon Kotecki. Jun 73, 50p CPA-AL-04-09-1020

Descriptors: (*Regional planning, *Alabama), (*Residential buildings, Regional planning), Policies, Demand(Economics), Population growth, Marketing, Supply(Economics).

The report presents an overview of housing in the state of Alabama based on existing housing studies. A series of growth policies are identified and an aggregated housing market has been identified. The private and public sectors' capability to develop housing is discussed as well as the home building industry's potential. Priorities of housing and housing programs for improving housing conditions are discussed. A housing program is included which calls upon public and private involvement at a 'grass roots' level to provide adequate housing in Alabama.

PB-224 348/3GA PC$6.00/MF$1.45
Top of Alabama Regional Council of Governments, Huntsville.
ZONING ORDINANCE OF THE CITY OF MADISON, ALABAMA.
Final rept.
Jun 73, 76p ALA-TAC-1095-1009-03

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Urban planning), Regulations, Ordinances, Urban areas.
Identifiers: *Madison(Alabama).

The ordinance is a revision of a previous ordinance adopted in 1962. It regulates land use within the corporate limits of Madison. The ordinance lists permitted uses and uses allowed as a special exception. The ordinance also lists dimensional requirements for the zoning districts, along with off-street parking, loading and unloading requirements and provisions for enforcement and administration. The ordinance also contains provisions for the regulation of mobile home parks. (Author)

PB-224 349/1GA PC$4.50/MF$1.45
East Alabama Regional Planning and Development Commission, Anniston.
INITIAL HOUSING ELEMENT, ROANOKE, ALABAMA.
Final rept.
Jan 73, 46p ALA-EAR-1490-1020-01

Descriptors: (*Urban planning, *Alabama), (*Residential buildings, Urban planning), Demography, Inventories, Economic factors, Income, Education, Construction.
Identifiers: *Roanoke(Alabama).

The initial housing element for the city of Roanoke, AL. is aimed at surveying changes in the city's housing in the past decade. Problem areas, on the whole, are emphasized and evaluated, and suggestions toward workable solutions are made. The report is intended to aid as a tool towards alleviating problems in housing in the community, in an overall effort to provide adequate, safe, and decent housing for the city's citizenry. (Author)

PB-224 350/9GA PC$7.25/MF$1.45
Birmingham Regional Planning Commission, Ala.
COMPREHENSIVE PLAN AND INITIAL HOUSING ELEMENT, PELL CITY, ALABAMA.
Final rept.
Jun 73, 103p ALA-BRP-0380-1020-4

Descriptors: (*Urban planning, *Alabama), Land use, Transportation, Residential buildings, Police, Fire protection, Libraries, Schools.
Identifiers: *Pell City(Alabama).

The plan outlines recommendations for the most orderly and efficient patterns of growth for the city. Based on existing socio-economic conditions, land use patterns, communuity facilities, transportation networks, and housing conditions, projections are made for the development of the city to 1990. (Modified author abstract)

PB-224 351/7GA PC$4.25/MF$1.45
East Alabama Regional Planning and Development Commission, Anniston.
ZONING ORDINANCE FOR THE CITY OF OXFORD, ALABAMA.
Final rept.
Jul 72, 43p ALA-EAR-0060-1020-03
Prepared in cooperation with the Oxford City Planning Commission.

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Ordinances), Regulations, Boundaries, Land use, Penalties, Residential buildings, Industrial buildings, Commercial buildings, Flood plains, Recreation, Parks.
Identifiers: *Oxford(Alabama).

The document constitutes a revision of the zoning ordinance of the city of Oxford, made as a result of the revised land use plan for Oxford, AL. These regulatory measures are made with consideration of, among other things, the character, population density, existing land uses, environmental conditions, and growth potential of each component area of the city of Oxford with a view of promoting desirable living conditions, protecting property against blight and depreciation, promoting the public welfare and encouraging the most appropriate use of land and other buildings and structures throughout the planning area.

PB-224 356/6GA PC$3.75/MF$1.45
Tampa Bay Regional Planning Council, St. Petersburg, Fla.
MANATEE COUNTY MAJOR THOROUGHFARE PLAN. 1972.
Final rept.
30 Jun 73, 31p LPA-73-1-TR-3
Prepared by Manatee County Planning Department.

Descriptors: (*Regional planning, *Florida), (*Streets, Regional planning), Highways, Traffic engineering, Right of way acquisition, Traffic safety, Standards, Ordinances.
Identifiers: *Manatee County(Florida).

The major thoroughfare plan of Manatee County, FL. has two purposes; first to provide the basic structure around which the continuing development of the county will occur; and second to provide the basis for ongoing programing of street and highway improvements and right of way acquisition.

PB-224 357/4GA PC$6.50/MF$1.45
South Central Alabama Development Commission, Montgomery.
INITIAL MINIMUM HOUSING ELEMENT, BRUNDIDGE, ALABAMA.
Final rept.
Jun 73, 87p ALA-SCA-XX05-1020-06

Descriptors: (*Urban planning, *Alabama), (*Residential buildings, Urban planning), Population growth, Industries, Employment, Income, Objectives, Surveys.
Identifiers: *Brundidge(Alabama).

The Initial Minimum Housing Element describes general housing conditions and identifies problems and obstacles to improved housing. It sets forth housing goals and objectives and proposes a five year program of planning and implementation activities. (Author)

PB-224 358/2GA PC$7.50/MF$1.45
Albama Development Office, Montgomery.
ALABAMA COMMUNITIES IN PERSPECTIVE,
LeRoy F. Tonklin, Jr. May 73, 109p ALA-ADO-X996-1020-1

Descriptors: (*Urban planning, *Alabama), Urban areas, Statistical data, Income, Employment, Education, Residential buildings, Law enforcement, Health, Sanitary engineering.

Alabama communities in perspective is one of the first comprehensive attempts to catalog important data on a community level basis for Alabama. This publication examines a number of characteristics of communities with populations of 2,500 and over. Within selected broad areas, the data is analyzed to examine several aspects of current community development. These selected areas are: (1) Population; (2) Income; (3) Employment; (4) Housing; (5) Major Industries Employment; (6) Occupational Profiles; (7) Education; (8) Government Finances; and (9) Quality of Life Indicators. (Modified author abstract)

PB-224 359/0GA PC$7.50/MF$1.45
Alabama Development Office, Montgomery.
WATER RESOURCES PLANNING IN ALABAMA.
Final rept.
Apr 73, 106p ALA-ADO-X996-WRC-73

Descriptors: (*Water resources, *Alabama), (*Research, Water resources), (*Regional planning, Water resources), Abstracts, Management, Planning, Land use, Water supply, Reservoirs, Water quality.

The report summarizes the current status of the program to structure a comprehensive plan for the development of the water resources of the state of Alabama. The report provides a brief historical review of the planning effort since the inception of the program in 1967 and contains in abstract form a summary of 33 individual work items dealing with the aspects of policy and objectives, legal and institutional arrangements, water availability and water use in Alabama, and related background material pertinent to the planning procedure. A proposal is made to create a water resources commission to assume responsibility for implementation of the planning and management of the water resources of the state. (Author)

PB-224 360/8GA PC$8.50/MF$1.45
Alabama Development Office, Montgomery.
EVALUATION OF COMPREHENSIVE PLAN, ALBERTVILLE, ALABAMA.
Final rept.
Jun 73, 129p ALA-PSI-0030-1020-01
Prepared by Public Systems, Inc., Huntsville, Alabama.

Descriptors: (*Urban planning, *Alabama), (*Community development, Urban planning), Education, Public health, Recreation, Safety, Urban transportation, Social welfare, Residential buildings, Public utilities, Local government.
Identifiers: *Albertville(Alabama).

The report represents an assessment of the comprehensive planning documents prepared for the use of the city of Albertville, Alabama. This report is directed at determining the usefullness of the planning documents to the city administration, the extent to which the plans have been implemented to date, and the impact of planned development activities on the Albertville community. (Author)

PB-224 361/6GA PC$4.50/MF$1.45
East Alabama Regional Planning and Development Commission, Anniston.
SUBDIVISION REGULATIONS FOR THE CITY OF SYLACAUGA, ALABAMA.
Final rept.
1973, 50p ALA-EAR-1645-1020
Prepared in cooperation with the Sylacauga City Planning Commission.

Descriptors: (*Urban planning, *Alabama), (*Land use zoning, Ordinances), Streets, Boundaries, Penalties, Design standards, Buildings, Revisions, Right of way acquisition.
Identifiers: *Sylacauga(Alabama).

These subdivision regulations are a revision of the subdivision regulations of Sylacauga, AL. They set forth the following: plat review procedures; the manner in which sketch design plans, preliminary and final plats are to be prepared and the information they should contain; design standards; required improvements; and necessary monumenting for the process of subdivision. (Author)

PB-224 362/4GA PC$3.00/MF$1.45
Alabama Development Office, Montgomery.
STANDARD POPULATION PROJECTIONS FOR ALABAMA COUNTIES.
Final rept.,
Gilford C. Glider. 1973, 5p ALA-ADO-X996-1020-11

Descriptors: (*Regional planning, *Alabama), (*Populations, Regional planning), Projection.

These population projections were developed for Alabama counties in order to improve coordination among all planning and development activities in the state through the use of a common base of population projections. These base line projections were selected as standard projections.

PB-224 373/1GA PC$6.75/MF$1.45
Mid-Ohio Regional Planning Commission, Columbus.
HOUSING THE REGION. REPORT ONE. REGIONAL HOUSING CODE,
William C. Habig, G. M. Ayya, and Bruce Burns.
Jan 73, 95p CPA-OH-15-16-0307-1
Report on Model Housing Code.

Descriptors: (*Residential buildings, *Standards), (*Regional planning, *Ohio), Models, Organizations, Objectives, Problem solving, Recommendations, Quality, Deterioration, Community relations, Law enforcement, Policies, Rehabilitation, Conservation.
Identifiers: *Housing codes, Substandard dwellings.

The report reviews the history of housing codes and reviews code enforcement techniques. A model housing code is presented for adoption and/or use as a guide for local jurisdictions in the development of housing codes.

PB-224 374/9GA PC$9.25/MF$1.45
American Society of Planning Officials, Chicago, Ill.
EXAMPLE OF A NONMETROPOLITAN OVERALL PROGRAM DESIGN: COMPREHENSIVE PLANNING ASSISTANCE PROGRAM.
Final rept.
Oct 72, 145p

Descriptors: (*Urban planning, *Grants), (*Regional planning, Grants), (*Handbooks, Regulations), Government, Documentation, Planning, Projects.
Identifiers: Comprehensive planning assistance, 701 assistance.

The report is designed to assist nonmetropolitan planning organizations applying for 701 Comprehensive Planning Assistance funds to develop overall program designs which meet their own management needs, as well as HUD's program requirements. The Overall Program Design is a tool by which public officials and their staffs can organize and direct their planning and management activities, whether HUD assisted or not. The document is an example, with explanatory comments, of an overall program design for an applicant representing a nonmetropolitan area. The Introduction to the report describes the requirements for a 701 application. It is consistent with HUD's Handbook, Requirements and Guidelines for a Grant (CPM 6041.1A), issued in March 1972. The Example OPD illustrates a suggested format for presentation of a planning and management work program. The content of these examples is purely illustrative.

PB-224 381/4GA PC$4.00/MF$1.45
Mid-Ohio Regional Planning Commission, Columbus.
WATER SUPPLY PLAN FOR COLUMBUS/FRANKLIN COUNTY.
Final rept.,
William C. Habig, Harmon T. Merwin, Robert B. Cooper, and Kenneth A. Cristofani. Dec 72, 36p CPA-OH-15-16-0307

Descriptors: (*Urban planning, *Ohio), (*Water supply, Urban planning), Water distribution, Water resources, Reservoirs, Forecasting, Channel improvements.
Identifiers: Columbus(Ohio), Franklin County(Ohio).

The report is a Water Supply Plan (Revised) for the Columbus - Franklin County metropolitan area. It is a revision of the Water Supply Plan portion of the Adopted 1969 Water-Related Facilities Plan. It encompasses the demand, supply, and distribution aspects of water supply for the metropolitan area, and includes technological and environmental considerations. (Modified author abstract)

PB-224 383/0GA PC$6.50/MF$1.45
Top of Alabama Regional Council of Governments, Huntsville.
LAND DEVELOPMENT PLAN, ATHENS, ALABAMA.
Final rept.
17 Apr 73, 88p ALA-TAC-0095-1020-02

Descriptors: (*Urban planning, *Alabama), (*Land use, Urban planning), Surveys, Residential buildings, Commercial buildings, Industrial buildings, Urban transportation, Streets, Traffic safety, Population growth, Objectives.
Identifiers: *Athens(Alabama).

The land development plan is a revision of a plan completed in 1959. Proposed herein are plans for land use and thoroughfares. The plan was adopted by the Athens City planning commission on April 17, 1973. (Author)

PB-224 384/8GA PC$7.25/MF$1.45
Texas Dept. of Community Affairs, Austin. Div. of Comprehensive Planning.
CITY OF COPPELL, TEXAS. COMPREHENSIVE PLAN 1972-1992. VOLUMES I, II, AND III.
Final rept. 1972-92.
Apr 73, 102p
Prepared by Samuel L. Wyse Associates, Dallas, Tex. and Rady and Associates, Inc. Fort Worth, Tex.

Descriptors: (*Urban planning, *Texas), Objectives, Land use, Residential buildings, Urban transportation, Central city, Economic analysis, Public utilities, Assessments, Pollution, Erosion, Standards, Population growth.
Identifiers: *Coppell(Texas).

The following topics are discussed in the report: Background; population; housing; land use; circulation, transportation, central business district; community facilities; utilities; environmental assessment; implementation; and, comprehensive plan.

PB-224 386/3GA PC$9.75/MF$1.45
Urban Consultants, Inc., Montgomery, Ala.
RECREATION AND CULTURE REPORT FOR THE STATE OF ALABAMA.
Final rept.,
Rick Martindale. Jun 73, 154p CPA-AL-04-09-1020

Descriptors: (*Parks, Inventories), (*Recreational facilities, *Alabama), Reviews, Forecasting, Mathematical prediction, Facilities, Site surveys, Requirements, Project planning, Concepts, Resources, Regional planning, Classifications, Land development.

The report presents an inventory of present studies dealing with parks in Alabama. It uses these studies as a base to make park projections for 1980 and 1990. The study is divided into five parts: An overview of recreational and historical sites and facilities; an analysis of park and recreation needs in Alabama for 1980-1990; an interim plan; conceptual plans; and financial resources available for development.

PB-224 390/5GA PC$17.75/MF$1.45
American Society of Planning Officials, Chicago, Ill.
EXAMPLE OF A STATE OVERALL PROGRAM DESIGN. COMPREHENSIVE PLANNING ASSISTANCE PROGRAM.
Final rept.
Oct 72, 315p

Descriptors: (*Regional planning, *State government), (*Project planning, Design), Organizations, Management planning, Information systems, Organizing, Grants.
Identifiers: 701 assistance, State planning, Comprehensive planning assistance, Application making, *Housing and urban development research, Management information systems.

The report is designed to assist state planning organizations applying for 701 Assistance to develop overall program designs which meet their own management needs, as well as HUD's program requirements. The Overall Program Design is a tool by which public officials and their staffs can organize and direct their planning and management activities whether HUD assisted or not. This document is an example, with explanatory comments, of an overall program design for an applicant representing a state area.

PB-224 392/1GA PC$9.00/MF$1.45
American Society of Planning Officials, Chicago, Ill.
EXAMPLE OF A CITY OVERALL PROGRAM DESIGN. COMPREHENSIVE PLANNING ASSISTANCE PROGRAM.
Final rept.
Oct 72, 140p

Descriptors: (*Urban planning, *Management), (*Community development, Grants), Handbooks, Methodology, Requirements, Project planning, Selection, Evaluation, Objectives, Writing, Documents, Cost analysis, Problem solving, Scheduling.
Identifiers: Milwaukee(Wisconsin), 701 assistance, Comprehensive planning assistance, Application making, State planning, Eligibility.

The report is designed to assist city planning organizations applying for 701 Comprehensive Planning Assistance funds to develop overall program designs which meet their own management needs, as well as HUD's program requirements. The Overall Program Design is a tool by which public officials and their staffs can organize and direct their planning and management activities, whether HUD assisted or not. The document is an example, with explanatory comments, of an overall program design for an applicant representing a city area. It illustrates a suggested format for presentation of a planning and management work program. The content of these examples is purely illustrative.

PB-224 394/7GA PC$4.50/MF$1.45
Mid-Ohio Regional Planning Commission, Columbus.
MODEL FLOOD PLAIN ZONING ORDINANCE.
Final rept.,
Harmon T. Merwin, Tim A. Richardson, and Robert J. Holland. Jun 72, 50p CPA-OH-05-00-0289

Descriptors: (*Regional planning, *Ohio), (*Land use zoning, Ordinances), Flood plains, Regulations, Floodways, Protection, Flood control, Boundaries.

The report is comprised of four sections: (1) Need for a flood plain management program and flood plain zoning; contains brief statement, accompanied by sketches, with some history of past experiences and what can be expected in the future; (2) explanation of model flood plain zoning ordinance, explains use and how Mid-Ohio regional planning commission is prepared to assist in adoption and implementation of flood plain zoning to those communities within its planning area subject to flood problems; (3) resolution No. 8-72 adopting model ordinance; and (4) model ordinance itself, single-district ordinance which can be easily adapted to a two-district approach by communities having adequate information. (Modified author abstract)

PB-224 396/2GA PC$3.75/MF$1.45
Oklahoma Univ., Norman. School of Civil Engineering.
DISAGGREGATE ACCESS MODE AND STATION SELECTION MODELS FOR RAIL TRIPS.
Final rept.,
Antti P. Talvitie, and Peter S. Liou. Sep 73, 92p
UMTA-OK-11-0016-73-1

Descriptors: (*Travel, Mathematical models), (*Railroad stations, Availability), Probability theory, Buses(Vehicles), Automobiles, Transportation.

Disaggregated probability choice models are developed for the access mode and for access station selections. In each of these models, there are at least two alternatives from which an individual traveller is allowed to make a choice. The results of this study suggests that the travellers' decision-making process for the mode and station choices of an access trip is behaviorally separate. That is the mode choice preceded by station choice. The auto mode is shown to be the least preferred access mode as compared to the walk and bus modes. The travellers do not value the set of transportation attributes the same when making decisions of the two choices. Finally, it is shown that different definitions of the 'relevant alternatives' result in significantly different models.

PB-224 412/7GA PC$14.50/MF$1.45
Pennsylvania State Univ., University Park. Center for the Study of Science Policy.
RESEARCH AND DEVELOPMENT PRIORITIES IN PENNSYLVANIA. PAPERS AND RECOMMENDATIONS OF A WORKSHOP HELD AT CAMP HILL, PENNSYLVANIA ON 5 MARCH 1973.
Final rept.,
Irwin Feller, Thomas Fox, Larry Gann, Drew Hyman, and Thomas Larson. Aug 73, 248p
Grant NSF-GT-34868

Descriptors: (*Regional planning, *State government), (*Research, *Pennsylvania), Meetings, Organizations, Objectives, Resources, Environmental engineering, Energy, Transportation, Community development, Public health, Education, Scheduling.
Identifiers: Research utilization, Workshops, Priorities.

Papers and recommendations are reported of a workshop held in Camp Hill, Pa., in 1973 to assist the Commonwealth of Pennsylvania in identifying areas and projects through which research and development can contribute to the realization of agency objectives. Areas covered were resource development, environmental management, energy, transportation, community affairs, health, and education.

PB-224 425/9GA PC$12.50/MF$1.45
Greenville County Planning Commission, S.C.
COMMUNITY USE OF SCHOOL FACILITIES.
Final rept.
Mar 73, 206p GCPC-1010

Descriptors: (*School buildings, *Community relations), (*Facilities, Utilization), (*Regional planning, *South Carolina), Joint operations, Organizations, Social welfare, Recreation, Public relations, Benefit cost analysis, Financing, Recommendations, Inventories, Surveys.
Identifiers: Greenville County(South Carolina), Joint usage.

The report studies the possible joint usage of public school facilities by the school district, recreation commissions and departments, social service agencies, and community groups. Also contained in the report is an inventory of school facilities, social economics data, and public programs existing in thirteen planning areas in the county. Recommendations are made that schools be used for school/parks, community centers, community education programs, and adult education programs. A cost analysis is made of facility operations and methods of financing joint use of facilities are presented.

PB-224 458/0GA PC$4.25/MF$1.45
Mid-Ohio Regional Planning Commission, Columbus.

CENTRAL-OHIO PLANNING AND SERVICE REGION FEASIBILITY STUDY.
Final rept.
Sep 73, 42p

Descriptors: (*Regional planning, Recommendations), (*Project planning, *Ohio), Organizations, Organizing, Coordination, Problem solving, Development, Legislation, Budgeting, Personnel.
Identifiers: County planning, Representation, Substate districts, *Regional planning agencies.

The report contains recommendations on how regional planning agencies might be formed within substate districts for purposes of planning and coordination on a multi-county basis. It includes proposals for agency functions, finances, and representation, as well as guidelines for possible new enabling legislation.

PB-224 466/3GA PC$9.75/MF$1.45
Tennessee State Planning Office, Nashville.
NEIGHBORHOOD ANALYSES, MARYVILLE, TENNESSEE 1973.
Final rept.
May 73, 154p TN-MARE-73-1006

Descriptors: (*Urban planning, *Tennessee), Residential buildings, Blighted areas, Assessments, Population growth, Sanitation, Standards, Social welfare, Neighborhoods, Economic conditions.
Identifiers: *Maryville(Tennessee).

The Maryville TN Neighborhood analyses is a study undertaken to obtain basic housing and population data that can be used to delineate the inadequacies of housing and the nature, extent, and causes of blight in the Maryville area. The neighborhood analyses provides an in-depth assessment of housing conditions, population characteristics, sanitary conditions, and the adequacy of community facilities and municipal services on a planning unit and neighborhood basis. Additional information is provided on characteristics of families affected by substandard housing. Recommendations to aid in developing a program to alleviate existing blighted conditions and to prevent future blight are also presented.

SC-WD-66-142-C/GA PC$4.75/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ENVIRONMENTAL DATA BANK INDEX: UNCLASSIFIED ENTRIES.
M. B. Gens. Feb 73, 52p

Descriptors: (*Environment, *Indexes), (*Sandia laboratories, Indexes), Computers, Data, Laboratory equipment, Performance testing.

For abstract, see NSA 28 06, number 15159.

TID-26341/GA PC$4.00/MF$1.45
North Carolina Univ., Chapel Hill. Dept. Of Environmental Sciences and Engineering.
POTENTIAL FOR THE USE OF COBALT-60 IRRADIATION IN THE TREATMENT OF WASTEWATERS.
D. A. Okun. Jun 73, 33p
Contract AT(07-2)-1

Descriptors: (*Liquid wastes, *Irradiation), (*Cobalt 60, *Waste processing), Radiosterilization, Sedimentation, Slurries, Water pollution.

For abstract, see NSA 28 05, number 10970.

UCRL-74666/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
NUMERICAL MODELING OF THE TRANSPORT, DIFFUSION, AND DEPOSITION OF POLLUTANTS FOR REGIONS AND EXTENDED SCALES.
J. B. Knox. 27 Mar 73, 16p CONF-730612-1

Descriptors: (*Air pollution, *Deposition), Diffusion, Geography, Mathematical models, Motion, Simulators.

For abstract, see NSA 28 04, number 10623.

13C. Construction Equipment Materials, and Supplies

AD-768 098/6GA PC$4.25/MF$1.45
Army Construction Engineering Research Lab Champaign Ill
CMP INSTRUCTIONS, SPECIFICATIONS, AND EXAMPLE.
Technical rept.,
E. R. Johnson. Sep 73, 108p Rept no. CERL-TR-P-9

Descriptors: (*Construction, *Scheduling), (*Military facilities, Construction), Logistics, Construction materials, Earth-handling equipment, Time studies, Advanced planning, Management planning, Computer programs.
Identifiers: CMP(Construction Management Procedures), Construction management procedures, Computerized simulation.

The problem was to develop a construction scheduling model for the Army Functional Component System (AFCS) which could be used by engineers in the field, theater-of-operation planners, and base development planners. To fulfill this requirement a Facility Scheduling Model and an Installation Tabulation Model were developed. Also included are instructions for architects and engineers and an example of the model. The Installation Tabulation Model duration was compared with duration derived by the CERL Construction Management Procedure (CMP) Computer Simulation Model. The comparison results in a recommended 1.35 multiplication factor for the Installation Tabulation Model. (Author)

AD-768 319/6GA PC$5.00/MF$1.45
Hydrospace-Challenger Inc Rockville Md
THE CONFIGURATION AND LOADING OF A TORISONALLY ELASTIC FAIRED CABLE.
Final rept.,
David B. Dillon. Oct 73, 59p Rept no. HCI-TR-4557-0001
Contract N00014-70-C-0040

Descriptors: (*Cable fairings, Loading(Mechanics)), (*Towing cables, Configuration), (*Cables(Mechanical), Mathematical models), Hydrodynamic configurations, Force(Mechanics), Torsion, Stability, Computer programs.
Identifiers: Computer aided design, BASIC programming language, TWIST computer program.

A mathematical model for the equilibrium configuration and tension for a flexible, faired cable with torsional elasticity in a uniform stream is presented. The differential equations are derived and a numerical integrating program for solving the initial value problem thus posed is given in the BASIC computer language. A sample problem is solved and discussed. (Author)

PATENT-3 713 414/GA Not available NTIS
Department of the Navy Washington D C
SYSTEM FOR ATTACHMENT TO AND LIFTING OF OBJECTS FROM DEEP WATER.
Patent,
William J. G. Wischhoefer, and William H. Hunley. Filed 26 Aug 65, patented 30 Jan 73, 12p Rept nos. PAT-APPL-483 908,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Positioning devices(Machinery), *Patents), (*Underwater equipment, Patents), (*Underwater objects, Recovery), Hoists, Attachment.
Identifiers: PAT-CL-114-50, Manipulators.

The patent concerns a deep water recovery system. It comprises a submersible vehicle and associated equipment, including an object attachment tool for attaching to sunken objects, a messenger line and buoy arrangement having an automatic attachment means and a hoisting cable grip which may be guided from the surface to the sunken object along the deployed messenger line for automatic attachment.

PB-224 244/4GA PC$6.25/MF$1.45
Massachusetts Inst. of Tech., Cambridge. Dept. of Civil Engineering.
IMPROVED UTILIZATION OF CONSTRUCTION MATERIALS.
Research rept.,
George Vernon Jones. Jun 73, 257p* R73-34, Structures Pub-370 NSF-GK-25510X-12
Grant NSF-GK-25510

Descriptors: (*Construction materials, *Demand(Economics)), (*Supply(Economics), Construction materials), Iron, Steel, Aggregates, Aluminum, Cements, Concretes, Plastics, Copper, Demolition, Salvage, Bricks, Design, Forecasting, Solid waste disposal, Utilization.
Identifiers: Waste recycling.

Supplies of natural resources are becoming increasingly scarce as demands increase exponentially. The construction sector is a large consumer of many material resources, and adequate supplies of these materials at the lowest possible price are necessary if the facilities demanded by society are to be provided. The demand for virgin resources can be greatly reduced through recycling. The volume of construction and demolition wastes is estimated to be 4.65 pounds per person per day, which is much larger than previous estimates. To date, these wastes have received very little attention, and as a result only a small amount of the material is recycled. Another way to reduce demand for material resources in construction is to increase facility lifetimes or reuse components or entire structures. The present trend toward off-site fabrication is increasing the feasibility of doing this.

13D. Containers and Packaging

PATENT-3 704 673/GA Not available NTIS
Department of the Navy Washington D C
LIGHT WEIGHT PALLET CONSTRUCTION.
Patent,
Joseph A. Drelicharz. Filed 20 Jan 71, patented 5 Dec 72, 6p Rept nos. PAT-APPL-107 922,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Pallets, *Patents), Cargo, Weight, Configuration.
Identifiers: PAT-CL-108-53.

The patent describes a reversible, compact stacking, fork-lift type pallet. It consists of a sheet of rigid material having spaced, parallel, diagonally disposed folds to provide a corrugated structure with four sides. Rows of aligned openings extend through adjacent folds to receive the usual spaced tines of a fork-lift truck from multiple directions. In manufacture a single sheet of material in the shape of a rhomboid parallelogram is perforated and then folded to the required corrugated shape.

13E. Couplings, Fittings, Fasteners, and Joints

AD-767 926/9GA PC$2.75/MF$1.45
Naval Research Lab Washington D C
FACTORS AFFECTING EPOXIES USED AS WIRE ROPE TERMINATORS IN THE SEA.
Final rept.,
Kenneth M. Ferer. Sep 73, 16p Rept no. NRL-MR-2646

Descriptors: (*Fastenings, *Epoxy plastics), Cables(Mechanical), Electric cables, Liquid immersion tests, Sea water, Degradation, Acceptability, Underwater equipment.

A study was made to determine which commercial epoxies could be used as strength-transfer agents in the sea. In the first phase of the program, an attempt was made to determine the strength of the bond between the wire surface and the epoxy. However, due to the large data scatter, only approximations were possible. The second phase involved immersion of compression specimens in artificial seawater. Most of the epoxies showed a loss in compressive strength of from 5 to 15 percent after a ninety-day time period. A few epoxies seemed to be unaffected. Difficulty in keeping the salts from settling out of solution and lack of biological aspects led to phase three. This last immersion test series lasted six months. Of nine different epoxies, three appeared unaffected, two were slightly damaged, two were deemed unusable, and two were completely destroyed. (Author)

AD-768 210/7GA PC$15.00/MF$15.00
Battelle Columbus Labs Ohio Metals and Ceramics Information Center
METALLURGY OF FUSION-WELD RAPAIR,
Robert M. Evans. Aug 73, 68p* Rept no. MCIC-73-15
Contract DSA900-74-C-0616
Available to non-U.S. addresses PC$17.50, MF$17.50.

Descriptors: (*Welds, *Maintenance), Defects(Materials), Welding, Iron, Steel, Aluminum alloys, Nickel alloys, Titanium alloys.

The report examines the important metallurgical factors that must be considered when planning and executing a repair weld. The implications of the effect of reapir welding on the more complex high-strength heat treatable alloys and heat-resistant alloys are described. The possible deleterious effects of repair welding in terms of the metallurgy are also covered. Then the specific considerations applicable to each of several base-metal systems are examined. The alloys covered include steels of all types, aluminum alloys, nickel-base alloys, and titanium alloys. Following sections on types of defects and welding metallurgy, a final section is devoted entirely to examples of repair welding problems which have been solved and studies made to determine the effect of reapir welding on the properties of weldments. (Author)

PATENT-3 711 139/GA Not available NTIS
Department of the Navy Washington D C
PRESSURE ACTUATED SPRING BIASED LATCH.
Patent,
Albert S. Polk, Jr. Filed 20 Aug 71, patented 16 Jan 73, 5p Rept nos. PAT-APPL-173 445,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Locking fastener devices, *Patents), Detents, Mechanical fasteners, Guided missile components, Pins(Mechanical).
Identifiers: PAT-CL-292-37.

The invention provides a latch mechanism particularly suitable for snap-lock attachment of a structure holding the latch to a structure having mating recesses. Generally, the invention relates to spring-biased, cam-operated latches and more particularly to a positive-locking latch device in which a circular band spring biases locking pins into retaining holes in a structure to which the latch is being attached. The latch is released by rotating a cam actuator which contacts the locking pins and withdraws them from the retaining holes.

SCL-DR-720075/GA PC$4.00/MF$1.45
Sandia Labs., Livermore, Calif.
NON-DESTRUCTIVE TESTING OF A PLATED ALUMINUM/STAINLESS STEEL JOINT.
J. W. Dini, H. R. Johnson, and G. N. Beeler. Apr 73, 26p

Descriptors: (*Welded joints, *Ultrasonic testing), (*Aluminium, Welded joints), (*Stainless steels, Welded joints), Bonding, Electroplating.

For abstract, see NSA 28 04, number 10615.

13F. Ground Transportation Equipment

AD-768 172/9GA PC$3.00/MF$1.45
Army Transportation Engineering Agency Newport News Va
RESTRAINT PROCEDURES FOR CARGO LOADED IN VEHICLES TO BE AIR TRANSPORTED.
Technical rept.,
Louis Zabohonski, Jr. Aug 73, 45p Rept no. USATEA-73-23

Descriptors: (*Cargo vehicles, Shear stresses), (*Air transportation, Cargo vehicles), Loading(Mechanics), Structural properties, Strength, Vehicle chassis components, Safety devices.

The report covers an analysis of the strength of the side racks of Army tactical cargo vehicles to determine their suitability to restrain cargo during air transport. The shear strength of the attachment of the cargo bed to the frame is defined based on information furnished from the US Army Tank-Automotive Command (USATACOM). Outlined are procedures for properly loading and restraining cargo in vehicles, using commonly available material. Results of the report indicate that the cargo bed shear from the frame and that these loads can be adequately restrained to the vehicle. The report also reveals potential problems in analyzing aircraft floor loads when the cargo is a loaded vehicle. (Author)

PB-223 898/8GA PC$4.25/MF$1.45
Cleveland Transit System, Ohio.
WABCO DATA ACQUISITION SYSTEM. AC PROPULSION PROJECT,
R. D. Smith, and W. P. Cymbor. Aug 73, 102p
UMTA-OH-06-0006-73-1

Descriptors: (*Electric cars, Data acquisition), (*Rapid transit railways, *Railroad cars), Electric drives, Alternating currents, Data processing equipment, Computer programs, Ohio, FORTRAN.
Identifiers: Cleveland transit system, FORTRAN 4 programming language.

In June, 1971, the Cleveland Transit System received a grant contract (Project OH-06-0006) from the Department of Transportation's Urban Mass Transportation Administration to test and evaluate on three rapid transit cars an AC propulsion system developed by the Westinghouse Air Brake Company (WABCO). The AC propulsion system incorporates a pulse width modulated inverter to convert constant voltage DC energy to variable frequency, variable voltage AC energy which in turn powers simple AC traction motors. The report describes the data acquisition system which was developed to measure, record and analyze performance data for the AC-powered rapid transit cars. The report is one of a series on various aspects of the project.

PB-224 010/9GA PC$4.25/MF$1.45
Transport and Road Research Lab., Crowthorne (England).
DYNAMIC BEHAVIOUR OF TWO LINKED-TWIN AXLE LORRY SUSPENSION SYSTEMS: A THEORETICAL STUDY,
J. Page. 1973, 43p TRRL-LR-581

Descriptors: (*Suspension systems(Vehicles), Dynamic response), (*Trucks, *Axles), Digital simulation, Energy absorption, Roads, Surface roughness, Mechanical shock, Damping, Great Britain.

Many heavy lorries have closely spaced twin rear axles linked by a compensating arrangement designed to equalize the load distribution. In the past, dynamic load variations caused by different linked axle suspension systems have been shown experimentally to vary significantly. This report describes a theoretical investigation into some of the causes. Two mathematical models of part-vehicles having axles linked by two common types of compensating arrangement are described. The dynamic loads applied to the road as the models pass over simple road surface irregularities are calculated. (Modified author abstract)

PB-224 064/6GA PC$5.50/MF$1.45
Michigan Univ., Ann Arbor. Highway Safety Research Inst.
INVESTIGATION OF SOME FACTORS AFFECTING THE AIM OF HEADLAMPS.
Paul L. Olson, and Rudolf C. Mortimer. 31 Jan 73, 66p UM-HSRI-HF-73-13

Descriptors: (*Motor vehicles, Headlamps), (*Headlamps, Alignment), Reliability, Validity, Test equipment, Maintenance, Traffic safety.

The study investigates headlamp aiming methods and devices; the quality of aiming by service stations, repair shops, and dealer service departments; the effect of vehicle service on aim; and the effect of vehicle loading. It was concluded that improved training of service personnel in the use and maintenance of aimers is needed. Mechanical aimers offer greater reliability than other types. Ways need to be found to reduce the errors in locating the vehicle's long axis before other methods can be recommended. Since factory aim is generally better than in the service trade, it may be suggested that new car aim should be checked out but not disturbed unless a large error is found.

PB-224 120/6GA PC$4.50/MF$1.45
Transportation Systems Center, Cambridge, Mass.
WAYSIDE NOISE AND VIBRATION SIGNATURES OF HIGH-SPEED TRAINS IN THE NORTHEAST CORRIDOR.
Final rept. Nov 71-Oct 72,
Edward J. Rickley, Robert W. Quinn, and Norman R. Sussan. Sep 73, 130p* DOT-TSC-OST-73-18

Descriptors: (*Rapid transit railways, *Noise(Sound)), (*Vibration, Roadbeds), Measurement, Spectrum signatures, Railroad tracks, Sound transducers.
Identifiers: Northeast Corridor, Noise pollution.

Measurements were made of the wayside noise and ground vibration levels generated during the passby of high-speed Metroliner and Turbotrains operating on the tracks of the Penn Central Railroad. The Metroliner in operation on the New York-to-Washington line was measured in Plainsboro, New Jersey. The Turbotrain in operation on the Boston-to-New York line was measured in West Mansfield, MA. In addition, freight trains and conventional passenger trains were measured and recorded. The report contains tabulations of the passby noise and vibration levels measured, time history level recordings and 1/3-octave frequency analyses of representative passby data.

13G. Hydraulic and Pneumatic Equipment

AD-767 667/9GA PC$3.75/MF$1.45
Lehigh Univ Bethlehem Pa Dept of Mechanical Engineering and Mechanics

DESIGN OF A NEAR-OPTIMAL FLUIDIC OPERATIONAL AMPLIFIER.
Technical rept.,
F. T. Brown, J. S. Boparai, and T. M. Sheikh. Jun 73, 86p Rept no. THEMIS-LU-TR-16
Contract N00014-69-A-0417

Descriptors: (*Fluid amplifiers, Design), Fluidics, Optimization, Flow separation, Feedback amplifiers, Transfer functions, Resonant frequency, Numerical analysis, Feedback.
Identifiers: *Fluerics, Proportional amplifiers, Control theory, Operational amplifiers, Themis project.

Traditional design of fluidic operational amplifiers places the loop filter, necessary for stability, in the feedback path. One consequence is severe saturation of the forward-loop high-gain amplifier for all except low frequency or very small amplitude input signals, producing very low effective break frequency. Using optimal control concepts a design was evolved employing, instead, forward-loop filtering. The forward-loop amplifier chosen, a five-stage proportional amplifier has a nearly constant gain for a broad band of frequencies. The optimal design which assumes this characteristic has, theoretically, neglecting certain inevitable dissipative and inertive effects, no transient saturation at all to step changes in the input, and a response which is theoretically ideal. The filters contain closed-end resonant cavities. (Modified author abstract)

AD-767 873/3GA PC$8.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
DYNAMIC ANALYSIS AND SIMULATION OF HYDRAULIC CONTROL SYSTEMS.
Master's thesis,
Santo C. Maggio. Dec 70, 119p Rept no. GAM/ME/71-6

Descriptors: (*Hydraulic systems, Performance(Engineering)), (*Aircraft, Control systems), Hydraulic pressure pumps, Hydraulic servomechanisms, Hydraulic valves, Pipes, Mathematical models, Computer programs, Theses.
Identifiers: Hybrid simulation, Digital simulation, Dynamic response.

Using a simplified system model consisting of a pump, transmission line, and load value, a general procedure is devised for analyzing the dynamic performance of a hydraulic control system. Mathematical models are developed for each component in terms of the pressures and flows into and out of the component. The individual models are combined into a complete system model which is used to simulate system operation on a hybrid computer. Simulation of pump operation without the transmission line attached is also performed on hybrid and digital computers. (Modified author abstract)

AD-767 882/6GA PC$5.25/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
DESIGN ANALYSIS AND TEST OF FLUIDIC COMMUNICATION COMPONENTS.
Master's thesis,
Robert J. Knowles, Jr. Jun 71, 75p Rept no. GAW/ME/71-3

Descriptors: (*Fluid amplifiers, Design), (*Communication systems, *Fluidics), Modulation, Modulators, Demodulators, Vortices, Acoustics, Theses.
Identifiers: Signal processing, Fluerics, Turbulent flow.

A fluidic communication system using turbulent two-dimensional flow as an operating medium was constructed. Input signals were amplified by means of amplitude modulation. Transmission lines of plastic tubing were used to transmit the modulated signal to the demodulation section. The inherent instability of a two-dimensional jet was used to provide a means of demodulation. Results reveal that modulation is successful if the input signal has a sound amplitude of at least 12% of the sound amplitude of the carrier frequency. The demodulator did not respond as predicted to the carrier frequency produced by the fluidic oscillators and thus did not demodulate the input frequencies with the degree of clarity as would be thought possible. (Author)

AD-767 942/6GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
PNEUMATIC TRANSPORT IN SPRAYER CHANNELS,
Yu. G. Logachev. 26 Sep 73, 14p Rept no. FTD-HT-23-856-73
Edited trans. of Mekhanika Protsessov Aviatsionnogo Opryskivaniya i Rasseivaniya Sypuchikh Veshchestv (USSR) v3 n219 p44-52 1971, by Paul J. Reiff.

Descriptors: (*Sprays, *Pneumatic systems), (*Pipes, Transport properties), Equations of motion, Mathematical models, Geometric forms, Particles, Velocity, Friction, USSR.
Identifiers: *Sprayer channels, Translations.

The basic feature of the pneumatic transport of friable or powdery matter in sprayers consists of the slight expansion and variable parameters (area and shape) of channel cross sections. When calculating and selecting parameters for these sprayers it is necessary to know the friction coefficient, the characteristic maximum permissible velocity of the medium at which there is still no residual precipitation of matter in the channels, and the acceleration of the particles of matter.

AD-767 972/3GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
BRANCHING THROUGH CYLINDRICAL CHANNELS HAVING EXTERNAL TRANSVERSE SCREENS IN THE FLOW OF A CONTINUUM,
Yu. G. Logachev, and E. S. Baryshev. 1 Oct 73, 13p Rept no. FTD-HT-23-858-73
Edited trans. of Mekhanika Protsessov Aviatsionnogo Opryskivaniya i Rasseivaniya Sypuchikh Veshchestv (USSR) v3 n219 p67-78 1971, by Paul J. Reiff.

Descriptors: (*Fluid flow, *Ducts), USSR, Friction, Flow fields, Pressure, Reynolds number, Curve fitting, Cylindrical bodies.
Identifiers: *Screened channel systems, Branching flow, Translations, Discharge.

The effect of external transverse screens on branching through cylindrical channels whose axis coincides with the incident flow of a continuum is investigated. These types of screened channel systems can be used as elements for aerial spraying devices, fans and heat exchange units, etc.

13H. Industrial Processes

AD-767 726/3GA PC$4.75/MF$1.45
National Materials Advisory Board (Nas-Nae) Washington D C
HIGH PERFORMANCE STEEL AND TITANIUM CASTINGS.
Final rept.
Feb 73, 153p* Rept no. NMAB-296
Contract DA-49-083-OSA-3131

Descriptors: (*Steel, Casting), (*Casting, *Titanium alloys), Castings, Melting, Furnaces, Heat treatment, Molding, Impurities, Porosity, Maintenance.
Identifiers: Steel HY-130, Steel HY-180.

The present state of foundry technology pertinent to the production of high performance HY-130 and HY-180 steel and titanium alloy castings is assessed. Problems encountered in current production and those anticipated in future production of large castings up to 20,000 pounds (finished weight) are discussed. Programs and approaches to resolve these problems are recommended. Factors considered were: specific melting processes and furnaces for preparing and refining molten alloys, casting design, mold and pouring practice, influence of chemical composition, impurity elements, heat treatment and other processing variables on mechanical properties of casting, present and anticipated foundry problems with specific alloys, weld repair and structural joining, scrap reclamation, and appropriate procurement specification requirements to assure attainment of desired properties and qualities in castings of all sizes. (Modified author abstract)

AD-768 112/5GA PC$3.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
DESIGN AND ANALYSIS OF A LASER ORIENTED, AUTOMATIC DIMENSIONAL SYSTEM FOR HIGH-SPEED PROCESS CONTROL,
Steven Morris Ward, and Joseph W. Foster. Jul 72, 92p* Rept no. USAMC-ITC-2-72-12

Descriptors: (*Production control, Automation), (*Small arms ammunition, *Quality control), Digital computers, Gas lasers, Electrooptics, Logic circuits.
Identifiers: Process control, *Automatic control, Helium neon lasers, Laser beams.

Recent advancements in the technology of high-speed manufacturing systems have introduced the need for a new approach in the design of process control systems. In the past few years, a new generation of manufacturing systems for the production of high-demand items, such as small caliber ammunition rounds, has been developed. The extremely high production rates of these systems have surpassed the capabilities of conventional quality inspection and process control methods. An automatic, computerized process control system is necessary in order to meet this demand. In this type of control system, quality inspection stations which convert measures of product attributes into digital information are required. The basis of the study is the development of a non-contact, quality inspection system which is fast, accurate, and inexpensive. (Modified author abstract) Portions of this document are not fully legible.

AD-768 113/3GA PC$3.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
HIGH SPEED LASER INSPECTION SYSTEM FOR PRODUCT PROFILES,
Patrick H. Brew, and Joseph W. Foster. Jul 72, 83p* Rept no. USAMC-ITC-2-72-14

Descriptors: (*Non-destructive testing, *Gas lasers), (*Industrial production, Non-destructive testing), Quality control, Acceptability, Automation, Photodiodes, Logic circuits.
Identifiers: *Production inspection, Helium neon lasers.

The report describes a high speed dimensional tester using an automated non-contact inspection device and utilizing a computer. The inspection system consists of a helium-neon gas laser which is a high intensity light source that is of low cost and has a long life. It will also contain lenses to shape and form the light, light sensing photodiodes, amplifier circuits, and corresponding logic circuits. The system is simple to operate and can be used in almost any environment providing the necessary laser safety precautions are taken.

AD-768 118/2GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
THE EFFECTS OF VARIABLE INSPECTOR ERRORS ON RECTIFIED SINGLE AND DOUBLE SAMPLING PLANS,
Joe Wayne Tucker, and Joseph W. Foster. Jul 71, 77p Rept no. USAMC-ITC-2-71-15

Descriptors: (*Quality control, Errors), Sampling, Costs, Economics, Curve fitting, Graphics, Computer programs, Tables.
Identifiers: Average outgoing quality, Average outgoing quality limit, Continuous sampling.

It was the purpose of the paper to observe the effect of inspector errors on the characteristics of single and double sampling plans. Noting that Type A and Type B errors were dependent on incoming quality, the author investigated the effect of varying the incoming quality levels on sampling plans with a specified AOQL. Since each of the incoming levels yielded a specific AOQL, the varying Type A and Type B errors might make one level more economic to the producer than others. While the author has not considered production cost for each quality level, this would have to be considered in making a preference of quality levels. In the example presented, the cost model showed there was no marked advantages of one quality over another. This applies only to the inspection task presented. A producer would have to obtain his own data for the functional relationship between incoming quality and inspector errors. Depending on this relationship, the cost of different incoming quality levels can be obtained.

AD-768 140/6GA PC$7.50/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
THE DESIGN OF TOOL REPLACEMENT POLICIES FOR A SERIES-PARALLEL PRODUCTION SYSTEM,
William P. Melton. Jul 72, 110p Rept no. USAMC-ITC-2-72-06

Descriptors: (*Production control, Maintainability), Replacement theory, Maintenance, Mathematical models, Statistical analysis, Computer programs.

For a production system of the configuration described in the introduction of the paper, application of the tool replacement policies developed herein will allow that system to operate at maximum production, given that the failure rates are approximately constant. (Author)

AD-768 141/4GA PC$6.25/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
EFFECTS OF INSPECTION ERROR ON SINGLE LEVEL CONTINUOUS SAMPLING PLANS,
James M Bonogofski, and Joseph W. Foster. Jul 72, 82p Rept no. USAMC-ITC-2-72-15

Descriptors: (*Quality control, Statistical analysis), (*Army procurement, Quality control), Sampling, Probability density functions, Computer programs, Tables.
Identifiers: Acceptable quality level, Average outgoing quality, Average outgoing quality limit, *Continuous sampling.

It was the purpose of the paper to observe the effects of inspection error on continuous sampling plans. The statistical development of the models for continuous sampling plans under the alternate assumptions of perfect and imperfect inspection produced expressions for the respective average outgoing qualities as functions of incoming quality.

AD-768 147/1GA PC$7.25/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
AN INTRODUCTION TO PRICE-ADJUSTED SINGLE SAMPLING WITH QUADRATIC INDIFFERENCE,
John Albert Jacobi, and Joseph W. Foster. Jul 71, 105p Rept no. USAMC-ITC-2-71-18

Descriptors: (*Quality control, *Sampling), Acceptability, Tolerances(Mechanics), Curve fitting, Graphics, Computer programs.
Identifiers: Price adjustments, Indifference curves, Verification inspection.

The research introduces and develops the concept of price-adjusted sampling with quadratic indifference. The basic purpose of price-adjusted sampling is the elimination of the process of rejecting lots, a procedure practiced in the application of conventional acceptance sampling methods. A discussion and history of various sampling techniques is presented with an emphasis on the comparison of the qualities of linear and quadratic indifference. Techniques for arriving at higher order indifference curves are explained along with the economic implications of various types of curves. In order to fully document the behavior of any given plan, it is necessary to tuilize a digital computer with plotting capability to illustrate the plan graphically. As a result, the application of the digital computer is emphasized heavily. (Author)

AD-768 149/7GA PC$6.25/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
PRICE-ADJUSTED VARIABLES SAMPLING WITH LINEAR INDIFFERENCE,
Dennis Lynn Beug, and Joseph W. Foster. Jul 71, 81p Rept no. USAMC-ITC-2-71-21

Descriptors: (*Quality control, *Sampling), Acceptability, Analysis of variance, Tables, Graphics.
Identifiers: Price adjustments, Indifference curves, Verification inspection, Normal density functions.

In the paper a price-adjusted sampling plan with linear indifference is developed for sampling by variables. Equations are developed for determination of sample size which meet the requirements of either consumer's risk or producer's risk for both known and unknown variance. The overall risk associated with all fraction defectives is shown graphically. Also, comparisons are made with price-adjusted sampling by attributes as well as acceptance sampling. (Author)

AD-768 175/2GA PC$5.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
SEQUENTIAL SAMPLING WITH PRICE-ADJUSTMENT,
Harvey V. Taylor, and Joseph W. Foster. Jul 71, 78p Rept no. USAMC-ITC-2-71-16

Descriptors: (*Quality control, *Sampling), Sequential analysis, Probability, Acceptability, Curve fitting, Graphics, Computer programs.
Identifiers: *Sequential sampling, Price adjustments, Verification inspection, Indifference curves, Acceptable quality level.

The paper extends the relatively new concept of price-adjustment sampling to the area of sequential sampling. The basic purpose of this new inspection technique is to eliminate the process of rejecting lots while retaining the advantages of sequential sampling. The history of acceptance sampling is first discussed to illustrate the development of some of the standard sampling techniques of today. The theory and procedures of sequential sampling are then reviewed as background for the development of Sequential Sampling with Price-Adjustment (SSPA). Next, the SSPA plans are developed and several sets of SSPA indifference curves are presented. Finally, the advantages and disadvantages of SSPA are discussed. Suggestions are offered concerning the utilization of SSPA and recommendations are given for future study on related topics. (Author)

AD-768 191/9GA PC$7.25/MF$1.45
Texas A and M Univ College Station
AUTOMATED PRODUCTION.
Master's thesis,
Robert J. Loomis, Jr. Apr 72, 104p

Descriptors: (*Production control, Automation), Quality control, Safety, Digital computers, Real time, Theses.
Identifiers: Automatic control.

The paper is intended to be the first in a series dealing with automated production and inspection systems. It develops the concept of a multilevel production and inspection system employing a hierarchical control configuration. Some of the system requirements and features discussed are hardware, software, inspection, quality control, adaptation, modeling and failure diagnosis. The paper also includes suggestions for future research to aid in the exploration of the ideas and concepts developed herein. (Author)

AD-768 239/6GA Not available NTIS
Defence Standards Labs Maribyrnong (Australia)
ON THE FORMATION OF A QUICK-STOP CHIP DURING SINGLE GRIT GRINDING,
E. D. Doyle. 17 Jan 73, 5p
Availability: Pub. in Wear, v24 p249-253 1973.

Descriptors: (*Grinding, Particles), Microstructure, Abrasives.
Identifiers: Chips.

An experimental method is described for the provision of quick-stop chips in an authentic grinding grit-workpiece situation. Metallographical and scanning electron microscopical examinations of the chips have provided information to aid the elucidation of the mechanism of metal removed during grinding with abrasive particles having large negative rake angles. (Author)

BDX-613-860/GA PC$3.00/MF$1.45
Bendix Corp., Kansas City, Mo.
BONDING DEGRADATION IN THE TANTALUM NITRIDE--CHROMIUM--GOLD METALLIZATION SYSTEM.
N. T. Panousis, and H. B. Bonham. Apr 73, 20p
CONF-730420-1
Contract AT(29-1)-613

Descriptors: (*Tantalum nitrides, *Bonding), (*Chromium compounds, Bonding), (*Gold compounds, Bonding), (*Resistors, Bonding), Compressibility, Conductor devices, Diffusion, High temperature, Medium temperature, Oxidation.

For abstract, see NSA 28 04, number 08780.

CEA-CONF-2192/GA PC$3.25/MF$1.45
Societe des Usines Chimiques, Pierrelatte (France). Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.
VAPOR DEPOSITION OF REFRACTORY METALS APPLIED TO THERMOELECTRIC CONVERSION. PERFORMANCE OF DEPOSITS OBTAINED BY REDUCTION OF FLUORIDES AT HIGH TEMPERATURE AND LOW PRESSURE.
R. Faron, M. Bargues, J. Gillardeau, R. Hasson, and G. Dejachy. 1971, 23p CONF-720613-5
In French. U.S. Sales Only.

Descriptors: (*Molybdenum, *Deposition), (*Tungsten, Deposition), (*Molybdenum alloys, Deposition), (*Tungsten alloys, Deposition), Cathodes, Electron emission, Molybdenum fluorides, Refractories, Thermoelectric generators, Tungsten fluorides, Very high temperature.

For abstract, see NSA 28 04, number 08622.

RFP-2014/GA PC$4.00/MF$1.45
Dow Chemical U.S.a., Golden, Colo. Rocky Flats Div.

ELECTRONIC CONTROL FOR INTERFEROMETRIC INSPECTION GAGE.
D. E. Gunderson. 18 May 73, 9p
Contract AT(29-1)-1106

Descriptors: (*Machine parts, *Inspection), Control systems, Data processing, Electronic equipment, Interferometers, Measuring instruments, Spherical configuration.

For abstract, see NSA 28 06, number 15157.

SC-DR-720847/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
CONTROLLED EVALUATION OF SIMPLIFIED CLEANING PROCEDURE.
G. J. Hof. Feb 73, 16p

Descriptors: (*Ceramics, *Cleaning), (*Microelectronics, Cleaning), Aluminium oxides, Bonding, Droplets, Impurities, Metals, Substrates, Tantalum nitrides, Water.

For abstract, see NSA 28 04, number 10614.

UCRL-74286/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
RELATIONSHIP OF SURFACE FINISH TO DIMENSIONAL TOLERANCE.
J. Bryan, and E. Lindberg. 3 Nov 72, 16p CONF-730512-1

Descriptors: (*Surfaces, *Roughness), (*Surface finishing, *Specifications), Measuring instruments.

For abstract, see NSA 28 05, number 12593.

13I. Machinery and Tools

AD-767 933/5GA PC$4.50/MF$1.45
Naval Ordnance Station Louisville Ky
EVALUATION OF THE TOOLING DESIGN FOR THE PRODUCTION OF LARGE DIAMETER - THIN WALL TUBULAR SHAPES. BY HYDROSTATIC EXTRUSION.
Final rept. on Phase 2B,
G. A. Gegel, T. G. Byrer, R. J. Fiorentino, and F. A. Simonen. Jul 73, 150p* Rept no. NOSL-MT-010

Descriptors: (*Dies, Extrusion), (*Extrusion, Rocket cases), Design, Cylindrical bodies, Aluminum alloys, Steel, Hydrostatic pressure, Mandrels, Small tools, Ordnance.
Identifiers: ASROC, Aluminum alloy 6061, Steel 1015, Steel 4135.

A multi-phase program was initiated for the development of a prototype-production process for manufacturing large diameter, thin-walled tubular ordnance items by hydrostatic extrusion. The ASROC missile case was selected as a component representative of such naval ordnance items. The full-scale tooling design concepts developed in Phase II(a) were modified and adapted to fit in Battelle's deven-inch bore hydrostatic extrusion container. The tooling design was then evaluated by extruding approximately half-scale cases from 6061 aluminum, AISI 1015 and AISI 4135 steel. Evaluation of the extruded products indicated that the dimensional requirements of the full-size ASROC could be achieved by hydrostatic extrusion. An economic analysis indicated that the estimated production cost for a full-size ASROC motor case could be reduced as much as 18%, based on quantities of 500, to 24%, based on quantities of 10,000, if produced by hydrostatic extrusion instead of shear forming. (Author) Protions of this document are not fully legible.

AD-768 357/6GA PC$3.00/MF$1.45
Trans-Sonics Inc Burlington Mass
THE INVESTIGATION AND INTERPRETATION OF THE NATURE OF WEAR PARTICLES.
Progress rept. 10 May-20 Sep 73,
J. L. Middleton, and V. C. Westcott. 20 Sep 73, 30p
Contract N00014-73-C-0455

Descriptors: (*Bearings, Degradation), Particles, Friction, Fatigue(Mechanics), Tests.
Identifiers: *Wear tests, Wear, Ferrograms.

During the sliding or rolling of one metal part against another, tiny metallic particles are produced. If the metal parts are lubricated by oil or grease the particles produced are of such a size that they are suspended in the oil in a colloidal manner. If one of the two metallic parts is composed of steel or alloys of steel, the metal particles generated during the wear process exhibit magnetic properties. The Ferrograph is an instrument which precipitates out these particles and deposits them on a transparent substrate. The particle sizes grade continuously along the substrate so that it is possible to examine individual particles in detail without interference from a random pile of other particles. The report surveys some of the findings about wearing systems and in large part is concerned with the correspondence between particle type and the class of mechanical part wearing. The report covers the processing and analysis of a number of oil samples furnished for this purpose. The report identifies the size, shape, and size distribution of adhesive, abrasive and fatigue-generated wear particles. (Author)

BARC-645/GA PC$3.75/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
DC PLASMA TORCH FOR METAL CUTTING.
1972, 34p
U.S. Sales Only.

Descriptors: (*Metals, *Cutting), (*Aluminium, Cutting), (*Stainless steels, Cutting), Cost, Cutting tools, Direct current, Operation, Performance, Plasma guns, Safety.

For abstract, see NSA 28 05, number 11217.

DUN-8077/GA PC$3.00/MF$1.45
Douglas United Nuclear, Inc., Richland, Wash.
LOEWY EXTRUSION PRESS: REPAIR AND ALIGNMENT 1972.
E. L. House. 13 Nov 72, 15p

Descriptors: (*Presses, *Maintenance), Extrusion, Repair.

For abstract, see NSA 28 04, number 10564.

N73-29463/9GA PC$7.00/MF$1.45
AiResearch Mfg. Co., Phoenix, Ariz.
SMALL, HIGH-PRESSURE RATIO COMPRESSOR MECHANICAL ACCEPTANCE TEST, VOLUME 2.
G. R. Metty, and W. I. Shoup. Jun 73, 99p NASA-CR-121193, APS-5404-R-VOL-2
Contract NAS3-14306
Seri-2.

Descriptors: *High pressure, *Performance tests, *Turbocompressors, Acceptability, Gas bearings, Impellers, Systems engineering.

For abstract, see STAR 1120

PAT-APPL-283502/GA PC$3.00/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
OPTICALLY ACTUATED TWO POSITION MECHANICAL MOVER.
Patent Application.
L. C. Yang, and A. J. Murphy. Filed 24 Aug 72, 12p NASA-CASE-NPO-13105-1,
Subm-Sponsored by NASA.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Actuators, *Pulsed lasers, Beam splitters, Patent applications, Shock waves.

An optically actuated mechanical mover adapted to be moved from an ambient position to an active position is described. The mechanical mover is comprised of a piston/cylinder arrangement including a piston that is contained within an internal cylindrical chamber of a housing. The cylindrical chamber is configured to permit the piston to be moved for the length of the chamber as a work stroke. A lock pin extending through the piston, and diametrically opposed walls of the chamber housing, retain the piston in the ambient position at one end of the chamber. An actuator for producing a pressure or shock wave that drives the piston is positioned at the end of the chamber corresponding to the piston ambient position. The actuator includes a transparent window panel having a metallic film coated on an interior surface to be vaporized in response to an incident pulse of laser energy and produce the desired shock wave. A stem extending from a face of the piston and through a corresponding end wall of the chamber, transmits the work force developed by the work stroke of the piston.

PAT-APPL-310615/GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
CONCENTRIC DIFFERENTIAL GEARING ARRANGEMENT.
Patent Application.
R. J. Zeiger, and J. C. Gerdts. Filed 29 Nov 72, 12p NASA-CASE-ARC-10462-1,
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Gears, *Machinery, *Mechanical drives, Equipment specifications, Patent applications, Product development.

The development of a concentric output differential gearing system is discussed. Two input members and two concentric output members are interconnected by a planetary gear arrangement. The second input engages a carrier with planetary gears. Rotation of the carriage causes rotation of the central sun gear. The interconnected motions of the input and output shafts are described. Mechanical drawings of the equipment are provided.

PATENT-3 706 651/GA Not available NTIS
Department of the Navy Washington D C
APPARATUS FOR ELECTROPLATING A CURVED SURFACE.
Patent,
James M. Leland. Filed 30 Dec 70, patented 19 Dec 72, 9p Rept nos. PAT-APPL-102 723,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Machines, Electroplating), (*Patents, Electroplating), Curved profiles.
Identifiers: PAT-CL-204-218.

The patent describes an apparatus for electroplating a curved surface of a workpiece. A relative and reciprocable motion is provided between the anode and the surface to be plated for controlling variations in plating thickness. The rotary motion is precessed to provide a constant phase shifting to cancel out plating irregularities. The anode is fabricated of a plurality of longitudinally spaced annular segments, with means to independently control the current to each segment.

PATENT-3 713 636/GA Not available NTIS
Department of the Navy Washington D C
INCENDIARY CUTTING TORCH FOR UNDERWATER USE.
Patent,

Horace H. Helms, Alexander G. Rozner, and Dana E. Spencer. Filed 22 Sep 70, patented 30 Jan 73, 7p Rept nos. PAT-APPL-74 434,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Torches, Underwater equipment), (*Patents, Torches), Incendiary mixtures, Cutting.
Identifiers: PAT-CL-266-23-NN.

The patent describes an incendiary torch having a cylindrical housing with a nozzle positioned at one end thereof. The nozzle is held in place by a retainer cap threadedly attached to the housing which includes a diaphragm overlying the aperture in the nozzle thereby preventing the ambient environment from entering the torch chamber. The end of the torch housing may be connected to a work holding device.

PATENT-3 722 967/GA Not available NTIS
Department of the Navy Washington D C
LOW HEAT GENERATION TURBINE ENGINE BEARING.
Patent,
Harry R. Lewis. Filed 26 Oct 71, patented 27 Mar 73, 4p Rept nos. PAT-APPL-191 980,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Roller bearings, *Patents), (*Turbine parts, Roller bearings), Engines + motors, Design, Lubrication, Heat.
Identifiers: PAT-CL-308-187.

The patent describes a low heat generation roller bearing having inner and outer races. Oil is applied to the surface where the rollers and inner race contact by means of an oil jet nozzle. Centrifugal force and rotation of the rollers, forces the oil around the rollers to the outer race. Radial bores extend through the outer race and connect with one or more circumferential grooves to collect and aid in transmission of oil from the outer race. A path is provided to return the oil to an oil sump for scavenging back to an oil supply tank.

13J. Marine Engineering

AD-767 675/2GA PC$8.00/MF$1.45
Naval Postgraduate School Monterey Calif
FACTORS INFLUENCING SHIP REPAIR PART CONSUMPTION.
Master's thesis,
Richard Alan Lippert, and William Thomas Lee. Sep 73, 116p

Descriptors: (*Spare parts, Inventory analysis), (*Ships, Maintenance), Fuel consumption, Naval vessels(Combatant), Naval vessels(Support), Ocean models, Ship models, Mathematical models, Costs, Computer programs, Theses, Naval equipment.
Identifiers: 3M system.

An investigation was made of possible linear relationships between several specific factors concerning ships of the Navy and the actual repair part consumption dollar figures for a two year period for the purpose of using such relationships for planning and budgetary aids. Factors considered included steaming hours, fuel consumption, overhaul schedules and overhaul mandays, and ship age. Overall Navy-wide linear models were developed for NSA (odd cog) stock numbered items, for APA (even cog) stock numbered items, for Other (odd cog) manufacturer's part-numbered items (items without a Federal Stock Number assigned), and for a combined overall repair part model. In addition, some of the same models were developed for the Pacific and Atlantic fleets and for certain ship types. (Author)

AD-767 680/2GA PC$9.25/MF$1.45
Naval Postgraduate School Monterey Calif
TURNING CHARACTERISTICS OF THE BELL 100 TON SURFACE EFFECT SHIP.
Master's thesis,
Kenneth Randall Myers. Jun 73, 145p

Descriptors: (*Ground effect machines, Maneuverability), (*Ships, Ground effect), Marine surface propulsion, Ocean waves, Marine rudders, Equations of motion, Mathematical models, Computer programs, Theses.
Identifiers: *Captured air bubble ships, Computer aided analysis, Computerized simulation.

The turning characteristics of the Bell 100 ton captured Air Bubble Surface Effect Ship (CAB/SES) are studied with the aid of the Oceanic Incorporated computer simulation. The craft's motions for straight runs, straight runs with waves and turning runs under calm water conditions, are compared with the final set of computer simulation turning maneuvers with waves involving changing speeds, wavelengths, wave amplitudes, and final rudder angles. (Author)

AD-767 791/7GA PC$3.50/MF$1.45
Wyle Labs Huntsville Ala Eastern Operations
FLOTATION STANDARDS ANALYSIS.
Final research and development rept.,
J. A. Cockburn, and C. A. Michalopoulos. Jun 73, 72p* Rept no. MSR-73-13 USCG-D-10-74
Contract DOT-CG-12377-A

Descriptors: (*Boats, Flotation), (*Safety, Boats), Buoyancy, Design, Specifications, Hulls(Marine), Styrene plastics, Polyethylene plastics, Isocyanate plastics, Numerical analysis.
Identifiers: Boating safety, Design standards.

Flotation rules and regulations from a variety of sources have been analyzed as part of a flotation research and development study. In addition to these analyses, three flotation standards have been critically compared on a term by term basis. The three standards were as follows: The USCG Basic Flotation Standard, The American Boat and Yacht Council Proposed Upright and Level Flotation Standard (Project H-8B), and a proposed Alternate Flotation Standard (representing an upgrade of the ABYC-H-8B proposed standard). Limited proof testing, using a john boat, a bass boat and an 18 ft I/O boat, has been carried out in order to investigate upright and level flotation and the stability of swamped boats. It was found that although each boat floated upright and level when swamped, movement outboard of weights in excess of 12.5% of the dry lived load capacity caused a loss of positive stability (defined by the conditions that gunwale immersion does not exceed one foot, and list does not exceed 30 degrees). These results suggest that although a basic upright and level attitude may be obtained without too much difficulty, the requirement for stability under the movement of passenger weight is much more difficult to obtain. (Author)

AD-767 793/3GA PC$4.75/MF$1.45
Wyle Labs Huntsville Ala Eastern Operations
UNITED STATES COAST GUARD SAFE LOADING DESIGN GUIDELINE.
Final rept.
Nov 72, 159p* Rept no. 58202-3(DG) USCG-D-9-74
Contract DOT-CG-12377-A

Descriptors: (*Boats, *Safety), (*Coast Guard, *Law), Design, Specifications, Weight, Marine surface propulsion, Hulls(Marine), Marine engineering.
Identifiers: Recreational boats, Design standards.

The safe loading standard applies to all general purpose boats less than 20 feet in length, the hull of which is begun after 31 October 1972, except sailboats, inflatables, canoes, and kayaks. For the purpose of the above, the term 'conventional general-purpose boats' includes mono-hull displacement or planing boats designed or intended to be propelled or controlled by oars, paddles, poles, mechanically driven water jets or submerged propellers, and capable of transporting at least one person clear of surface water. The designer or builder of a boat may choose to determine compliance with the Safe Loading Standard by performing specific tests set forth in the USCG Safe Loading Test Procedure, reference number 33 CRF 183 subpart C. He may choose to estimate compliance with the standard analytically to a reasonable degree of accuracy by following the guidelines, calculations, performance charts and tables contained herein. This document presents a means of calculating the safe load capacity for a boat at the design stage. The methodology is designed for use by persons not having formal training in the field of naval architecture. Detailed diagrams, tables, and calculation sheets are provided; and, an example problem is worked out for each step of the calculation. (Author)

AD-767 838/6GA Reprint
Massachusetts Inst of Tech Cambridge Dept of Ocean Engineering
STRUCTURAL ANALYSIS AND DESIGN OF A CATAMARAN CROSS-STRUCTURE BY THE FINITE ELEMENT METHOD,
Alaa Mansour, and Paul Fenton. 1973, 11p Rept no. 72-7
Contract N00014-67-A-0204
Availability: Pub. in Naval Engineers Jnl., p33-42 Feb 73.

Descriptors: (*Ship decks, Shear stresses), (*Catamarans, *Ship plates), Ship hulls, Stresses, Loading(Mechanics), Bending, Mathematical models, Marine engineering.
Identifiers: ASR-21 vessel, Finite element analysis, Six degrees of freedom, Computer aided design, Structural design, Structural analysis.

One of the problems encountered during the design of the ASR-21 Catamaran is the determination of the effectiveness of the cross-structure deck plating. In this paper, this problem is examined using the finite element method. The behavior of a multicell box girder representing a catamaran cross-structure is studied. Because of the relatively low length-to-breadth ratio of a typical catamaran cross-structure, the deck plating effectiveness is found to be rather small. Parametric studies are performed and curves of the effectiveness as a function of the relevant geometric and loading parameters are presented. These curves may be helpful in the early stages of new design. (Author)

AD-768 277/6GA Not available NTIS
British Ship Research Association Wallsend (England) Wallsend Research Station
JOURNAL OF ABSTRACTS OF THE BRITISH SHIP RESEARCH ASSOCIATION. VOLUME 28, NUMBER 9, ABSTRACTS NO. 35,145-35,310.
Sep 73, 78p
See also Volume 28, Number 8, AD-767 118.
Availability: Pub. in Jnl. of Abstracts, v28 n9 p658-733 Sep 73.

Descriptors: (*Marine engineering, *Abstracts), Design, Ship structural components, Marine surface propulsion, Marine safety equipment, Construction, Shipyards, Maintenance, Corrosion, Fouling, Bibliographies, Great Britain.

Contents:
Ship design;
Ship construction;
Ship machinery and systems;
Ship operation;
and Ocean engineering.

COM-73-11519/8GA PC$2.75/MF$1.45
Oregon State Univ., Corvallis. Dept. of Mechanical Engineering.

APPLICATION OF WATERJET HYDRAULICS TO AN UNDERWATER EXCAVATION SYSTEM,
L. E. Johnson. 15 Jun 73, 16p NOAA-73082811
Grant NOAA-043-158-4
Presented at World Dredging Conference, Hamburg, 12-15 Jun 73.

Descriptors: (*Hydraulic jets, *Underwater excavation), (*Fisheries, Underwater equipment), Crabs, Sediments, Shallow water, Salvage.
Identifiers: Water jets, Fishing gear.

Fishing gear, oceanographic research instruments and other items are placed on the sea floor with the intent of recovery at a later time. During their placement, sediment is often deposited around and upon this gear and recovery becomes difficult if not impossible. The report describes the application of waterjet hydraulics to an underwater excavation system. Crabbing gear present special problems. The author presents a proposal of an improved nozzle assembly to be used for the removal of sediment from buried crabbing gear. It can excavate a circular area nearly twice as large in diameter as the nozzle assembly now in use.

COM-73-11532/1GA PC$4.75/MF$1.45
California Univ., San Diego, La Jolla. Inst. of Marine Resources.
THE NONLINEAR DYNAMICS OF CABLE SYSTEMS,
Roderick Alfred Barr. Aug 73, 161p UC-IMR-74-1, Sea Grant Pub-4 NOAA-73090505
Contract NOAA-2-35208
Also pub. as California Univ., Berkeley. Coll. of Engineering, Rept. no. NA-73-3.

Descriptors: (*Towing cables, Dynamic properties), (*Ships, Towed bodies), Equations of motion, Boundary value problems, Ocean environments, Oceanography, Computer programs, Computerized simulation, Nonlinear differential equations, Finite difference theory, Numerical integration, Theses.
Identifiers: Method of characteristics, Underwater cable dynamics, Sea Grant program.

A method is developed for calculating the dynamic response of towed-cable systems. This method, which is designed to provide realistic computational times, retains important nonlinearities but uses simplified equations of longitudinal motion. General equations of motion including terms due to elasticity, bending and internal damping are derived. The method of characteristics, which is an especially attractive method for solving these equations, can be used only if the equations are hyperbolic. It is shown that the equations are hyperbolic only if elasticity is included and bending and internal damping are neglected, and further, that bending and internal damping can be safely neglected for most cases. The excessive computational times required by the large longitudinal characteristic velocity (cable material sonic velocity) can be avoided if only the transverse equations of motion are solved by the method of characteristics. The equations of motion are simplified by a procedure similar to that used in deriving the boundary layer equations. A number of computed examples are presented.

COM-73-11577/6GA PC$5.50/MF$1.45
National Maritime Research Center, Galveston, Tex. Ship Maintenance and Repair Program.
ANALYSIS OF DRYDOCK OPERATIONS DURING NORMAL MAINTENANCE AND INSPECTION OUTAGES.
Technical rept.,
William H. Lawder. Jun 73, 68p NMRC-272-22000-R1

Descriptors: (*Drydocks, *Marine engineering), Marine terminals, Floating docks, Graving docks, Maintenance management, Overhauling, Reconditioning, Preventive maintenance.

The reviews reasons for drydocking ships, basic types of drydocks in current use, and the process of drydocking a U.S. vessel in a commercial floating drydock in an American Shipyard. A normal underwater inspection procedure conducted for mandatory periodic survey by the United States Coast Guard and the American Bureau of Shipping, is described and comments made on problems encountered in preparation for inspection, recoating, and repairs made to satisfy the Coast Guard and National Bureau of Standards. In view of the ever-increasing size of modern ships and the consequent increased cost of drydocking these ships, the report identifies major problems associated with drydocking and proposes areas of study by Maritime Administration to eliminate or minimize these problems. (Modified author abstract)

PATENT-3 702 597/GA Not available NTIS
Department of the Navy Washington D C
SALVAGE WORK VEHICLE.
Patent,
William T. Odum, James H. Elkins, and Thomas M. Coggings. Filed 7 Apr 71, patented 14 Nov 72, 6p Rept nos. PAT-APPL-132 032,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Underwater vehicles, *Patents), Salvage, Deep submergence, Underwater propulsion, Hydrostatic pressure, Attachment.
Identifiers: PAT-CL-114-16-8.

A salvage work vehicle having attachment means to provide propulsive engagement with large salvage pontoons is disclosed in the patent. The attachment of vehicle and pontoon is accomplished by means of a vacuum attachment coupler.

PATENT-3 703 012/GA Not available NTIS
Department of the Navy Washington D C
CLOSE PACKING OF UNIFORM SIZE SPHERES.
Patent,
Phillip W. Mast, and Laurent A. Beaubien. Filed 12 Dec 69, patented 21 Nov 72, 6p Rept nos. PAT-APPL-884 526,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Floats, Hydrodynamic configurations), (*Hydrodynamic configurations, *Patents), Buoyancy, Packaging, Optimization, Geometric forms.
Identifiers: PAT-CL-9-8.

The patent describes a method for attaining ultimate efficiency in the packing of uniform-sized spheres, which may be used to improve the buoyancy of flotation systems using small hollow spheres.

PATENT-3 713 548/GA Not available NTIS
Department of the Navy Washington D C
FOLDED TENSIONED HIGHLINE SYSTEM.
Patent,
August M. Hanke. Filed 21 Oct 71, patented 30 Jan 73, 6p Rept nos. PAT-APPL-190 874,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Positioning devices(Machinery), *Patents), (*Cargo ships, *Material control), Cargo, Handling, Logistics, Ship auxiliary equipment.
Identifiers: PAT-CL-214-13, Shipboard handling equipment, Highline transfer systems.

The patent relates to a highline transfer system for transferring loads between ships underway at sea having a highline winch and a ram tensioner to compensate for relative ship motion and a folded highline connected to a winch having three drums.

TT-70-55125/7/GA PC$4.50
National Marine Fisheries Service, Washington, D.C.
MARINE TECHNOLOGY AND MANAGEMENT. VOLUME 25, NUMBER 7, 1970.
1973, 134p
Trans. of Technika i Gospodarka Morska (Poland) v25 n7(229) p289-336 1970, by O. Ray-Badziak and W. Roszkowski. The above journal is translated on a regular basis. Sponsored in part by the National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: (*Marine engineering, *Poland), Economic factors, Seaports, Containerizing, Fisheries, International law, Surface navigation, Collision avoidance, Overhauling, Harbors, Marine salvage, Translations.
Identifiers: Technological development, Maritime law.

Reports are presented on marine management and technology in Poland, including the economics and operation of seaports and shipping, marine fisheries, maritime law, navigation and nautical practice, overhauls and the technical operation of shipping, the operation of harbors, port development projects, container transport, coastal salvage, and fishery problems.

TT-70-55126/7-8/GA PC$3.75
National Marine Fisheries Service, Washington, D.C.
SHIPBUILDING. VOLUME 15, NUMBER 7/8 1970.
1973, 80p
Trans. of Budownictwo Okretowe (Poland) v15 n7/8 p217-272 1970, by T. Borysiewicz and L. Przeradzki, and O. Roy-Badziak. The above journal is translated on a regular basis. Sponsored in part by the National Science Foundation, Washington, D.C. Special Foreign Currency Science Information Program.

Descriptors: (*Shipbuilding, *Poland), Gust loads, Electrification, Mathematical models, East Germany, Automation, Flame cutting, Corrosion prevention, Machinery, Trends, Standardization, Magnetic compasses, Translations, Scandinavia.
Identifiers: Ferry traffic.

Reports are given on various aspects of Polish shipbuilding at home and abroad, including the development of ferry traffic with S candinavian countries, aerodynamic characteristics of ships, fatigue strength, electrification, shipyard output in the German Democratic Republic, flame cutting of sheet steels, heating propulsion engines, machinery and equipment, and standardization of magnetic compasses.

TT-70-55126/9-10/GA PC$4.25
National Marine Fisheries Service, Washington, D. C.
SHIPBUILDING. VOLUME 15, NUMBERS 9-10, 1970.
1973, 124p
Trans. of Budownictwo Okretowe (Poland) v15 n9/10 p273-350 1970, by M. Baginski, L. Przeradzki, and J. Radziwill. The above journal is translated on a regular basis. Sponsored in part by National Science Foundation, Washington, D. C. Special Foreign Currency Science Information Program.

Descriptors: (*Shipbuilding, *Poland), Shipyards, Merchant ships, Shipping containers, Containerizing, Marine surface propulsion, Ship structural components, Design, Translations.

Contents:
Design and construction;
Machines and equipment;
Polish united shipyards bulletin;
Electrical engineering aboard ship;
Classification and standardization.

13K. Pumps, Filters, Pipes, Fittings, Tubing and Valves

AD-767 930/1GA PC$3.75/MF$1.45
Naval Coastal Systems Lab Panama City Fla
THE TEST AND EVALUATION OF FLOW FUSES FOR USE IN MANNED PRESSURE CHAMBERS.
Informal rept. May-Dec 72,
Clifford R. Holland. Aug 73, 86p Rept no. NCSL-174-73

Descriptors: (*Check valves, Performance(Engineering)), (*Underwater vehicles, Safety valves), Pressure vessels, Manned, Orifices, Safety, Life expectancy, Test equipment, Test methods.
Identifiers: Flow fuzes, Poppet valves.

Manned pressure chambers used in sea or shore diving operations are subject to catastrophic depressurization from external piping failures. Recently, a device designed to permit bidirectional fluid flow while protecting 'flow out' lines has become available. This device, called a Flow Fuse, is essentially a flow sensitive check valve with the poppet spring-loaded open. Flow fuses were procured and evaluated using a test piping system to simulate line ruptures and sudden large increasing leaks; four fuse sizes were tested (1/4 in., 1/2 in., 1 in. and 2 in. line sizes). Data on closure flows, differential pressures, and closure speeds were analyzed. Rapid closure (10 - 100 milliseconds) occurred when flow attempted to exceed trip point settings. No failures occurred in 10,000 total actuations. All fuses have adjustable trip points, easy serviceability, and should provide excellent resistance to corrosive environments. (Modified author abstract)

N-72-24686/GA PC$7.60/MF$1.45
Aerojet Nuclear Systems CO., Azusa, Calif. (Usa).
LONG-LIFE, SPACE-MAINTAINABLE NUCLEAR STAGE REGULATORS AND SHUTOFF VALVES. FINAL REPORT.
Mar 72, 236p NASA-CR-123568, RN-A-71007
Contract NAS8-27568

Descriptors: (*Space propulsion reactors, Valves), (*Valves, *Design), Space vehicles.

For abstract, see NSA 28 05, number 12111.

ORNL-TM-3476/GA PC$5.00/MF$1.45
Oak Ridge National Lab., Tenn.
SECONDARY STRESS INDICES FOR INTEGRAL STRUCTURAL ATTACHMENTS TO STRAIGHT PIPE.
W. G. Dodge. Jun 73, 60p
Contract W-7405-eng-26

Descriptors: (*Pipes, *Stress analysis), (*Computer codes, L codes), (*L codes, Stress analysis), (*Reactor cooling systems, Stress analysis), Numerical solution.

For abstract, see NSA 28 04, number 08102.

ORNL-TM-4121/GA PC$4.25/MF$1.45
Oak Ridge National Lab., Tenn.
THERMAL STRESS ANALYSIS AND LIFE PREDICTION OF MSRE FREEZE FLANGES.
C. H. Gabbard. Dec 72, 43p
Contract W-7405-eng-26

Descriptors: (*Msre reactor, *Flanges), Pipes, Stress analysis, Testing, Thermal cycling, Thermal fatigue.

For abstract, see NSA 28 05, number 12077.

PATENT-3 714 777/GA Not available NTIS
Department of the Navy Washington D C
PRESSURE DIFFERENTIAL LIMITER.
Patent,
De Lacy F. Ferris. Filed 6 Jul 70, patented 6 Feb 73, 4p Rept nos. PAT-APPL-56 021,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Check valves, *Patents), (*Liquid rocket propellants, *Propellant control), Rocket motors(Liquid propellant), Propellant tanks, Pressurization, Diaphragms(Mechanics).
Identifiers: PAT-CL-60-39-48, Poppet valves.

The patent relates to a normally open pressure differential actuated oxidizer flow control valve which is located in a liquid propellant system using a storage tank which employs a pressurized bladder to expel the oxident. This valve has an actuating piston responding to the increased expulsion gas-oxident pressure differential which occurs near completion of a missile firing. It is located in the oxidizer line and responds to such differential pressure increase to sever a shear disc and initially admit expulsion gas pressure to one side of the valve actuating piston. The other side is exposed to oxidizer pressure and, upon creation of sufficient pressure differential across the piston the valve closes to stop oxidizer flow.

PEL-225/GA PC$3.25/MF$1.45
Atomic Energy Board, Pelindaba, Pretoria (South Africa).
TESTING ABSOLUTE AND ACTIVATED CHARCOAL FILTERS AT PELINDABA.
H. W. W. Adrian, and J. Kruger. Dec 72, 22p
U.S. Sales Only.

Descriptors: (*Air filters, *Performance testing), Charcoal, Safari-1 reactor.

For abstract, see NSA 28 05, number 10843.

SLA-73-221/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
FEASIBILITY STUDY ON FAST-ACTING VALVES FOR AIRBORNE NUCLEAR CONTAINMENT SYSTEMS.
W. F. Scott. Jun 73, 33p

Descriptors: (*Aircraft propulsion reactors, Valves), (*Valves, *Design), Accidents, Containment, Impact strength, Reactor safety, Seals, Spheres.

For abstract, see NSA 28 05, number 12125.

SLA-73-464/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ANALYSIS, TESTING, AND DESIGN OF FILAMENT WOUND, CARBON--CARBON BURST TUBES.
R. C. Jr. Reuter, and T. R. Guess. May 73, 29p

Descriptors: (*Space vehicles, *Reentry), (*Carbon, *Filaments), (*Composite materials, *Tubes), Cylindrical configuration, Failures, High pressure, Laplace transformation, Stresses.

For abstract, see NSA 28 05, number 12582.

13L. Safety Engineering

AD-768 077/8GA PC$2.75/MF$1.45
New York City-Rand Inst N Y
MATHEMATICAL PROGRAMMING APPLICATIONS IN THE ANALYSIS OF THE DEPLOYMENT AND UTILIZATION OF FIRE-FIGHTING RESOURCES,
Peter Kolesar. Mar 73, 16p* Rept no. P-4988

Descriptors: (*Fire safety, *Urban areas), (*Firefighting vehicles, Deployment), Mathematical models, Linear programming, Nonlinear programming, Urban planning.
Identifiers: *New York City(New York).

The paper gives a brief review of some applications of mathematical programming in the analysis of the deployment of fire engines. The author discusses a semi-Markov decision process (linear programming) formulation of the problem of deciding how many fire engines to dispatch to a new alarm, a staged integer programming formulation of the problem of relocating fire engines to rebalance city-wide protection when extremely large fires deplete part of the city, and simple nonlinear integer programming formulations of strategic resource allocation problems. All analyses have resulted in policy recommendations that have influenced current operations of the New York City Fire Department. (Author)

AD-768 342/8GA PC$4.75/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Systems and Logistics
ACCIDENT RESEARCH: THE HUMAN ELEMENT IN INDUSTRIAL ACCIDENTS.
Technical rept.,
Duncan L. Dieterly. Sep 73, 55p Rept no. AU-AFIT-SL-7-73

Descriptors: (*Accidents, *Industries), (*Behavior, Accidents), Safety, Human engineering, Personality, Attention, Organizations, Environment, Predictions.
Identifiers: *Industrial accidents.

The author reviews previous research published in the area of industrial accidents. The review is limited to those studies which have established some behavioral cause in the impact of accidents. The effect of individual differences of the employee as a contributing factor in causing accidents is examined. The studies were analyzed to determine their relevance and importance within current conceptualizations. (Modified author abstract)

N73-29986/9GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, Fla.
GUIDE FOR CONTRACTOR SAFETY PLANS AT JOHN F. KENNEDY SPACE CENTER.
30 Mar 73, 15p NASA-TM-X-69492, KSC-GP-509-REV
Misc-Revised.

Descriptors: *Cape kennedy launch complex, *Contractors, *Safety, Accident prevention, Management planning, Reports.

For abstract, see STAR 1120

N73-29987/7GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
EVACUATION AREAS FOR TRANSPORTATION ACCIDENTS INVOLVING PROPELLANT TANK PRESSURE BURSTS.
R. D. Siewert. 1972, 19p NASA-TM-X-68277, E-7597
Conf-Presented at the 1972 Jannaf Propulsion Meeting, New Orleans, 27-29 Nov. 1972.

Descriptors: *Accidents, *Chemical explosions, *Flammable gases, *Rail transportation, Evacuating (Transportation), Probability theory, Safety, Statistical analysis.

For abstract, see STAR 1120

PB-223 976/2GA PC$7.00/MF$1.45
National Highway Safety Administration, Washington, D. C. Office of Accident Investigation and Data Analysis.
MULTIDISCIPLINARY ACCIDENT INVESTIGATION SUMMARIES. VOLUME 4, NUMBER 5.
Jul 73, 321p DOT-HS-601 395
See also PB-222 983, Volume 4, Number 4.

Descriptors: (*Motor vehicle accidents, *Accident investigations), Collision research, Death, Injuries, Automobiles, Design standards, Highways, Environments.

The report contains case summaries of recent in-depth reports submitted by National Highway Traffic Safety Administration sponsored Multidisciplinary Accident Investigation Teams in a continuing series of publications. Accidents are studied involving vehicles of the last three model years of fatal, injury producing, or property damage severity. The teams investigate the accidents in-depth concerning themselves with each element of the collision (human, vehicle, environment) as it interacts with each phase of the collision (pre-crash, crash, post-crash). The summaries consist of identification information, basic information on the highway and vehicles involved, a description of the drivers and occupants with their injuries, a phase-by-phase description of the sequence of events of the collision, and a list of the causal factors, conclusions and recommendations. A diagram of each collision is included.

13M. Structural Engineering

AD-767 825/3GA PC$15.75/MF$1.45
Princeton Univ N J Dept of Civil and Geological Engineering
LARGE SCALE EARTH PRESSURE TESTS WITH MODEL FLEXIBLE BULKHEADS.
Final rept.,
Gregory P. Tschebotarioff. 31 Jan 49, 272p

Descriptors: (*Foundations(Structures), Soil mechanics), Clay, Sand, Bulkheads, Pressure, Friction, Mechanical properties, Test methods.
Identifiers: Backfill, Ground motion.

The report describes the results of research program established to study the performance of flexible anchored bulkheads backfilled with different types of soils.

AD-767 826/1GA PC$7.25/MF$1.45
Army Materiel Command Alexandria Va
ENGINEERING DESIGN HANDBOOK. COMPUTER AIDED DESIGN OF MECHANICAL SYSTEMS,
Edward J. Haug, Jr. 15 Jul 73, 346p* Rept no. AMCP-706-192

Descriptors: (*Structural parts, Design), Saddle point method, Calculus of variations, Linear programming, Nonlinear programming, Army equipment, Stresses, Structural properties, Systems engineering, Programming(Computers), Optimization, Handbooks.
Identifiers: *Computer aided design, *Structural design, Control theory, Applications of mathematics.

Contents: Elements of computer aided design; Finite dimensional unconstrained optimization; Linear programming; Nonlinear programming and finite dimensional optimal design; Finite dimensional optimal structural design; The calculus of variations and optimal process theory; Optimal structural design by the indirect method; Methods of steepest descent for optimal design problems; Application of steepest descent methods to optimal structural design.

AD-768 021/8GA PC$6.75/MF$1.45
Newark Coll of Engineering N J Dept of Mechanical Engineering
EXTENDED STRUCTURAL SYNTHESIS CAPABILITY FOR AUTOMATED DESIGN OF FRAME-STIFFENED, SUBMERSIBLE, CIRCULAR, CYLINDRICAL SHELLS,
Michael Pappas, and Arnold Allentuch. Jun 73, 95p Rept no. NCE-NV-8
Contract N00014-71-A-0124-0002

Descriptors: (*Stiffened cylinders, Design), (*Structural shells, Underwater), Cylindrical bodies, Loading(Mechanics), Hydrostatic pressure, Bulkheads, Mathematical models, Computer programs.
Identifiers: Computer aided design, Cylindrical shells.

The report presents a procedure and computer program for the minimum weight design of circular, cylindrical, 'T' frame (ring) reinforced, submersible shells where all metal thicknesses may be confined to specified gage thickness values. Using the designer specified parameters defining shell radius, shell length, eccentricity, operating depth, design factors of safety, construction materials properties, and, when used, the specified gage thickness values, the program will generate those values of skin thickness, stiffener web and flange thicknesses, stiffener web depth and flange width, and if desired, stiffner spacing that will produce the smallest shell weight to liquid weight displaced ratio. Design equations control general, shell (skin) and stiffener instability, and skin and stiffener yielding. (Modified author abstract)

AD-768 206/5GA PC$3.75/MF$1.45
Stanford Research Inst Menlo Park Calif
DYNAMIC ANALYSIS OF REINFORCED CONCRETE FLOOR SYSTEMS.
Technical rept.,
Carl K. Wiehle, and James L. Bockholt. May 73, 94p
Contract DAHC20-71-C-0292

Descriptors: (*Floors, Structural properties), (*Reinforced concrete, Floors), (*Fallout shelters, Blast), Nuclear explosions, Mathematical models, Failure(Mechanics), Protection, Beams(Structural), Flexural strength, Loading(Mechanics), Deflection, Equations of motion, Bending, Moment of inertia, Mathematical prediction, Steel.
Identifiers: NFSS(National Fallout Shelter Survey), National fallout shelter survey, Overpressure.

The objective of the overall research program is to develop an evaluation procedure applicable to existing National Fallout Structural Survey type structures and private homes. Past efforts have been concerned with examining exterior walls, window glass, steel frame connections, and applications to actual buildings. This report presents interim analytical techniques developed for predicting the dynamic response and collapse of various types of reinforced concrete floor systems. However, because of an immediate need for procedures for predicting the collapse of floors over basement areas in existing buildings, the analytical models were based on the readily available technical information, which is primarily a result of design, rather than collapse requirements. Therefore, the procedures presented in the report are considered as interim techniques that are subject to future modifications as may be required. (Author)

AD-768 278/4GA PC$3.75/MF$1.45
Naval Civil Engineering Lab Port Hueneme Calif
DEVELOPMENT OF A QUICK CAMP SYSTEM FOR SEABEES.
Technical rept. Jul 68-Jun 72,
Richard H. Seabold. Sep 73, 90p Rept no. NCEL-TR-796

Descriptors: (*Shelters, Design), (*Naval personnel, Naval shore establishments), Containers, Mobility, Transportation, Cost effectiveness, Environmental tests, Specifications, Performance(Engineering), Life expectancy, Efficiency, Operation.
Identifiers: *Quick camps.

Quick Camp modules are standard 8x8x20-foot shipping containers outfitted for living. They serve as habitats in the field, as temporary storage facilities when not deployed, and as cargo containers in transit. They can be transported by ships, trucks, rail cars, and aircraft, including helicopters. The facilities include berthing, messing, sanitation, administration, medical treatment, shop, laundry, recreation, and storage. The system includes structural, electrical, air treatment, and water purification and distribution subsystems. User needs and the environment were studied, a concept was formulated, and the first cycle of system analysis was performed. A contractor designed the entire system and fabricated three selected first-generation prototype modules: camp utilities, kitchen and all purpose. Cost-effectiveness studies were performed in specific areas for making major design decisions and in general to determine the economic feasibility of the system. Structural, environmental, electrical, and operational tests were conducted and evaluated. As a result, input data for the second cycle of system analysis were generated. (Author)

AD-768 293/3GA PC$3.00/MF$1.45
Naval Civil Engineering Lab Port Hueneme Calif
PRELIMINARY INVESTIGATION OF STRUCTURAL DAMAGE FROM POINT MUGU, CALIFORNIA EARTHQUAKE OF FEBRUARY 21, 1973.
Technical note,
S. K. Takahashi, and W. E. Schniete. Aug 73, 37p Rept no. NCEL-TN-1307

Descriptors: (*Earthquakes, Damage assessment), California, Seismic waves, Buildings, Seismographs, Guided missile ranges, Naval shore establishments, Design.
Identifiers: *Earthquake engineering, Ventura County(California).

The report contains information and photographs obtained during a preliminary investigation of structural damage caused by the Point Mugu, California earthquake of 21 February 1973. The earthquake was rated at 5.9 on the Richter scale and caused widely scattered minor damage to residential buildings, damage to numerous stores with perishable and fragile goods, and resulted in unsafe conditions in many older unreinforced structures. Structural damage also occurred at the U.S. Naval Missile Center at Point Mugu. Damage to a three-story barracks, to a two-story Headquarters building, to an airfield hangar and to other facilities are described. (Author)

COM-73-50212-10/GA PC-GPC/MF$1.45-NTIS
Bureau of Competitive Assessment and Business Policy, Washington, D.C.
CONSTRUCTION REVIEW. VOLUME 19, NUMBER 8, AUGUST 1973.
Monthly industry rept.
Aug 73, 64p
Paper copy available from GPO $11.50/year as C41.30/3:19, $1.00/copy as C41.30/3:19/8.

Descriptors: (*Construction, Reviews), Construction materials, Highways, Statistical data, Classifications, Residential buildings, Projects, Licenses, Commercial buildings, Contracts, Cost analysis, Prices, Employment, Salaries.
Identifiers: *Construction review, Monthly summaries, Vacant dwellings.

Monthly statistical summaries are given with comparative data for previous years, for private and public housing units by SMSA, type, and geographic region; new construction permits; contract awards for federal residential and nonresidential buildings, highways, and housing projects including additions and alterations; indexes of costs, wholesale prices, and union wages; indexes of materials production, shipments, and stocks; and contract employment by type of contractor. A special feature on materials in highway construction is presented.

CONF-730629-2/GA PC$3.00/MF$1.45
Blume (John a.) and Associates, Engineers, San Francisco, Calif.
DAMAGE PREDICTION FOR LOW-RISE BUILDINGS.
J. A. Blume, and R. E. Scholl. 1972, 4p

Descriptors: (*Buildings, *Seismic effects), (*Nuclear explosions, *Ground motion), (*Earthquakes, Ground motion), Mechanical vibrations, Structural models, Underground explosions.

For abstract, see NSA 28 05, number 10834.

CONF-730629-3/GA PC$3.00/MF$1.45
Blume (John a.) and Associates, Engineers, San Francisco, Calif.
ELEMENTS OF DYNAMIC-INELASTIC DESIGN CODE.
J. A. Blume. 1972, 10p

Descriptors: (*Buildings, *Seismic effects), Design, Earthquakes, Specifications.

For abstract, see NSA 28 06, number 15129.

CONF-730629-4/GA PC$3.00/MF$1.45
Blume (John a.) and Associates, Engineers, San Francisco, Calif.
STRUCTURAL RESPONSE TO MAN-INDUCED GROUND MOTION.
J. A. Blume, and S. A. Freeman. 1972, 4p

Descriptors: (*Buildings, *Seismic effects), (*Nuclear explosions, *Ground motion), (*Earthquakes, Ground motion).

For abstract, see NSA 28 05, number 10835.

PB-224 411/9GA PC$3.00/MF$1.45
Puerto Rico Planning Board, Santurce.
EXPERIMENTAL INDUSTRIALIZED HOUSING PROGRAM. MODEL H-620 - SINGLE FAMILY DWELLING.
Final rept. on phase 2.
30 Sep 72, 19p PRPB-71-02
Prepared by Puerto Rico Urban Renewal and Housing Administration.

Descriptors: (*Residential buildings, Reinforced concrete), (*Prefabrication, Houses), (*Construction, *Puerto Rico), Socioeconomic status, Cost analysis, Asbestos cement products, Roofs, Wooden structures, Floors, Walls, Project planning.
Identifiers: *Low cost housing, Detached dwellings, Low income housing.

The report contains a description and plans for a reinforced concrete house with asbestos cement roof, to be prefabricated by industrialized methods. A detailed cost analysis is included.

UCRL-73912/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
PROVIDING AN EARTHQUAKE-LIKE ENVIRONMENT FOR TESTING FULL-SCALE STRUCTURES BY USING THE GROUND MOTION FROM UNDERGROUND NUCLEAR TESTS.
D. L. Bernreuter, and F. J. Tokarz. 27 Dec 72, 6p
CONF-730629-1

Descriptors: (*Earthquakes, *Ground motion), (*Nuclear explosions, Ground motion), (*Buildings, *Seismic effects), (*Mechanical structures, Seismic effects), Simulation, Underground explosions.

For abstract, see NSA 28 06, number 12834.

14. METHODS AND EQUIPMENT

14B. Laboratories, Test Facilities, and Test Equipment

AD-767 696/8GA PC$3.00/MF$1.45
Naval Postgraduate School Monterey Calif
CALIBRATION OF FLOW NOZZLES USING TRAVERSING PITOT-STATIC PROBES.
Technical rept.,
Raymond P. Shreeve. Jul 73, 33p Rept no. NPS-57SF73071A

Descriptors: (*Axial-flow compressors, *Test equipment), (*Nozzles, Calibration), Pitot tubes, Compressible flow, Programming(Computers), Gas turbines, Flow fields.
Identifiers: *Compressor flow nozzles.

A description is given of a method for calibrating flow nozzles used in compressor testing which is insensitive to flow variations during a survey. A computer program to reduce hand-recorded data from manometers is described which uses a compressible flow expression whose derivation is included in the first appendix. This appendix gives forms of the statement of continuity along a streamline when limiting values of the density and velocity are used to non-dimensionalize these parameters. The technique has been found to simplify the writing of computer programs for analyzing measurements from turbomachines, and to generally simplify analyses of flows that can be taken to be adiabatic. (Modified author abstract)

AD-767 750/3GA Reprint
California Univ Santa Barbara Dept of Physics
APPLICATIONS OF IMPATT DIODES AS RF SOURCES FOR MICROWAVE EPR SPECTROSCOPY,
R. D. Hogg. 22 Jan 73, 7p AFOSR-TR-73-1713
Grant AF-AFOSR-2007-71
Revision of report dated 1 Sep 72.
Availability: Pub. in Review of Scientific Instruments, v44 n5 p582-587 May 73.

Descriptors: (*Spectrometers, Microwave oscillators), (*Microwave oscillators, *Avalanche diodes), Paramagnetic resonance, Sensitivity, White noise.
Identifiers: *IMPATT diodes, Electron paramagnetic resonance.

IMPATT diodes are presented as an alternate rf source for electron paramagnetic resonance (EPR). Their noise performance is shown to be comparable to klystrons while having the advantages of lost cost, long life, and simple power supply requirements. The stability of the IMPATT diode is such that frequency locking is not usually necessary. Where needed, locking may be done with existing klystron lock boxes through the addition of a varactor. An IMPATT marginal oscillator with a sensitivity of about 2X 10 to the 12th power spins/G is also described. The oscillator's sensitivity is essentially independent of power and it can be used with an external detector or in the self-detection mode. (Author)

AD-767 803/0GA Reprint
University of Southern California Los Angeles Electronic Sciences Lab
CRYSTALLOGRAPHIC INFORMATION FROM SCANNING ELECTRON MICROSCOPE IMAGES,
D. B. Whittry. 1972, 6p AFOSR-TR-73-1705
Contract F44620-71-C-0067, Grant DAHC15-70-G-14
Also sponsored by Grant NSF-GK-3904.
Availability: Pub. in the Proceedings of International Conference on X-Ray Optics and Microanalysis (6th) Tokyo, 1972 p471-475.

Descriptors: (*Electron microscopes, Performance(Engineering)), Electron microscopy, Crystallography, Silicon.
Identifiers: *Scanning electron microscopy.

In conventional scanning electron microscopes, the angle of incidence of the electron beam varies as the electron beam scans over an extended area. In this paper, a scanning mode is described that provides controlled crystallographic contrast by maintaining a constant but controllable angle of incidence. This mode, called an area scan mode, is complementary to the angle scan mode employed in selected area channeling patterns. The advantage of a scanning system that provides for rapid switching between area scan and angle scan modes is emphasized and an example of application to a silicon bicrystal is given. (Author)

AD-767 852/7GA Reprint
Massachusetts Inst of Tech Cambridge Research Lab of Electronics
A SPHERICAL-ABERRATION CORRECTOR USING ELECTRON-TRANSPARENT CONDUCTING FOILS,
M. G. R. Thomson. 1973, 2p
Availability: Pub. in the Annual Proceedings of Electron Microscopy Society of America (31st), New Orleans, La., 1973 p1-2.

Descriptors: (*Electron microscopes, Corrections), (*Electron lenses, Corrections), Foils.

One of the problems associated with building any aberration-corrected electron microscope objective lens lies in the difficulty of obtaining a sufficiently short focal length. A corrector device which can be used with a conventional magnetic objective lens of short focal length must either have dimensions comparable to the bore and gap of that lens, or have very large magnetic or electric field gradients. In this paper an electrostatic system of very small dimensions is suggested.

AD-767 854/3GA Not available NTIS
Mcmaster Univ Hamilton (Ontario) Dept of Engineering Physics
NEUTRON IMAGING WITH THIN GADOLINIUM CONVERTERS,
A. A. Harms, T. G. Blake, and J. P. Marton. 15 Jan 73, 3p
Availability: Pub. in the Nuclear Instruments and Methods, v109 p253-255 1973.

Descriptors: (*Gadolinium, *Image converters), (*Radiographic film, Image converters), Internal conversion, Electrons, Neutron beams, Optical properties, Backscattering, Radiography, Films, Thickness, Canada.
Identifiers: Optical density, *Neutron radiography.

The optical density obtainable with thin gadolinium converters in a neutron radiographic imaging system has been investigated. An analysis between experimental and theoretical results has been undertaken to elucidate the dependence of optical density on system parameters. It has also been found that converter-foil backings contribute to optical density. (Author)

AD-767 884/0GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
DEVICE FOR THE SUPPLYING OF COMPRESSED AIR TO MODELS IN WIND TUNNELS,
R. G. Feigelman, E. I. Privalov, P. A. Malakhov, E. G. Galkin, and E. S. Bessmertnyi. 19 Sep 73, 11p Rept no. FTD-HT-23-239-74
Edited trans. of Patent (USSR) 335 561 p1-4, 11Apr 72, by Charles T. Ostertag, Jr.

Descriptors: (*Compressed air, *Wind tunnels), Design, Pipes, Rotation, Fittings, Accuracy, Patents, USSR.
Identifiers: Hinges, Translations.

The invention relates to the area of experimental aerodynamics. Devices which are used for supplying compressed air to models in wind tunnels with mechanical balances and a flexible suspension include a receptable, pipelines, a strut, and an intramodel hinged assembly for the separation of air. However, in such devices large friction forces develop. The proposed device differs from the known ones in that the pipeline on the sector from the receptacle to the strut is made of a combination of identical hinged assemblies consisting of races, rotating coaxially relatively to one another, with an end labyrinth seal for the radial exhaust of scoured air; and the intramodel hinged assembly consists of a strut and housing, turning relative to each other.

AD-767 922/8GA PC$2.75/MF$1.45
Naval Research Lab Orlando Fla Underwater Sound Reference Div
NRL RESOURCES IN UNDERWATER ACOUSTIC TRANSDUCER RDT/E.
1 Jul 73, 18p Rept no. NRL-MR-2662

Descriptors: (*Underwater sound equipment, *Transducers), Scientific research, Mathematical models, Materials, Calibration, Standardization, Manufacturing methods, Systems engineering.

Expertise and specialized facilities in the field of underwater acoustic transducer RDT and E available in the Naval Research Laboratory are described. The categories are personnel expertise (radiation theory, mathematical models, active materials, passive materials, transducers for RDT and E, standardization, calibration metrology, calibration systems, and at-sea operation), resources in facilities and instrumentation (USNS HAYES, USNS MIZAR, calibration facilities, acoustic research tanks, ocean RDT and E transducers, standard and related transducers), and special area resources, which include high-power transducers (theory and models, materials, fabrication, system engineering, test and evaluation) and near-field theory and techniques. (Author)

AD-767 931/9GA PC$3.00/MF$1.45
Naval Ordnance Lab White Oak Md
PROPOSED MODERNIZATION OF THE SPHERICAL FIELD COIL FACILITY, BUILDING 203,
Milton H. Lackey. 11 Jun 73, 30p Rept no. NOLTR-73-128

Descriptors: (*Test facilities, Magnetic fields), Coils, Magnetometers, Satellites(Artificial), Magnetic moments, Calibration, Measurement, Magnetism.

The report is a proposal for the modernization of the Spherical Field Coil Facility, Building 203, at the Naval Ordnance Laboratory. The modernization is directed at instrumenting the facility for the conduct of magnetic tests on large satellite systems for the Naval Research Laboratory. The proposal consists mainly of a description of two major instrumentation systems; the magnetic field generation and stabilization system, and the data acquisition and analysis system. A brief description is also included of the coil system, and of the supporting analytic studies. Building 203 is an ideal facility for satellite testing because of the large entrance, the reinforced floor, and the high-quality coil system. (Author)

AD-767 956/6GA PC$3.00/MF$1.45
Naval Ship Engineering Center Philadelphia Pa Philadelphia Div
SHOCK RESISTANT GAGE GLASSES.
Research and development rept.,
Y. J. Fostyk. 10 Sep 73, 37p Rept no. NAVSECPHILADIV-A-1354

Descriptors: (*Glass, Shock resistance), (*Meters, Glass), Cutting, Pipers, Test methods, Impact tests.

A procedure for cutting a shock resistant, chemically strengthened tubular gage glass was devised and documented. It was field tested and found to be sufficiently clear, complete, and relatively easy to implement aboard ship. A ball drop type impact test stand was designed and constructed. (Modified author abstract)

AD-767 960/8GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
A METHOD OF TEMPERATURE COMPENSATION AND A NEW HOT-WIRE ANEMOMETRIC SENSOR FOR MEASURING FLOW VELOCITY,
A. L. Grokholskii, and N. I. Tkachev. 27 Sep 73, 10p Rept no. FTD-HT-23-34-74
Edited trans. of Akademiya Navuk BSSR, Minsk. Institut Teplo- i Massoobmena. Trudy, v1 p393-397 1972, by Victor Mesenzeff.

Descriptors: (*Anemometers, Wire), (*Temperature control, Anemometers), Errors, Turbulence, Experimental design, Gas flow, Liquids, USSR.
Identifiers: Hot wire anemometry, Translations, Temperature compensation.

Determining the velocity of turbulent nonisothermal fluxes of gases and liquids by the hot-wire anemometer involves perfecting the methods of temperature compensation and the development of new designs for hot-wire anemometric sensors. The problem of eliminating errors caused by the temperature turbulence of the flow is still unsolved. A new method is proposed for temperature compensation directly in the studied zone of the flow, based on the use of a two-terminal thermoelectric sensor of a hot-wire anemometer.

AD-767 998/8GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
DEVICE FOR THE TRANSMISSION OF STATIC LOADS TO A TEST CONSTRUCTION,
I. V. Primakov, and B. V. Sovetov. 19 Nov 73, 8p Rept no. FTD-HT-23-243-74
Edited trans. of Patent (USSR) 335 559 pl-2, 11 Apr 72 by Charles T. Ostertag, Jr.

Descriptors: (*Test equipment, Loading(Mechanics)), Structural parts, Patents, USSR.
Identifiers: Translations, Static loads.

The patent describes a device for the transmission of static loads to a test construction which includes a housing with a hydraulic chamber with an elastic diaphragm attached to the hydraulic system, a loading attachment, and a stamp. To ensure the transfer of loads, the loading attachment and the stamp are made together in the form of shaped sections which interact on one end with the elastic diaphragm of the hydraulic chamber and the other end with the surface of the test construction.

AD-768 000/2GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
STAND FOR TESTING THE POWER PLANT OF AN AIRCRAFT,
Yu. M. Markvit, and P. B. Kulikovskii. 19 Sep 73, 7p Rept no. FTD-HT-23-247-74
Edited trans. of Patent (USSR) 334 500 pl-2, 30 Mar 72, by Charles T. Ostertag, Jr.

Descriptors: (*Test facilities, Design), (*Jet engines, Captive tests), Patents, USSR, Wind tunnel nozzles, Diffusers, Cooling.
Identifiers: Translations.

The report describes an invention relating to the technology of testing aircraft engines jointly with the air scoop and elements of the aircraft under the conditions of supersonic flight.

AD-768 001/0GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
DEVICE FOR THE DEMONSTRATION AND MEASUREMENT OF AERODYNAMIC LIFT,
A. A. Dyukov. 19 Sep 73, 5p Rept no. FTD-HT-23-248-74
Edited trans. of Patent (USSR) 335 567 pl-2, 11 Apr 72, by Charles T. Ostertag, Jr.

Descriptors: (*Lift, *Test equipment), Aerodynamic characteristics, Rotation, Gas flow, Hydrodynamics, Measurement, Patents, USSR.
Identifiers: Translations.

The invention is concerned with aerodynamic tests and is related to devices for the measurement of lift acting on a body which is rotating in gas or liquid flows.

AD-768 059/8GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
RADIO ENGINEERING METHOD FOR DETERMINING THE DEGREE OF WEAR OF MACHINE PARTS,
V. S. Vergunov, O. G. Korol, T. I. Lyasjenko, L. A. Skalko, and V. S. Chumachenko. 19 Sep 73, 9p Rept no. FTD-HT-23-181-74
Edited trans. of Samoletostroenie i Teknika Vozdushnogo Flota (USSR) n25 p69-71 1971, by Charles T. Ostertag, Jr.

Descriptors: (*Test methods, Wear resistance), Machines, Lubricants, Impurities, Measurement, Coils, Iron, USSR.
Identifiers: *Wear tests, Translations.

A method is proposed for the analysis of oil to determine the content of iron in it. It is based on a change in the quality factor of an induction coil, into which a test tube with the investigated oil has been placed.

AD-768 094/5GA PC$3.00/MF$1.45
Harry Diamond Labs Washington D C
THE FLUIDIC LOAD CELL,
Tadeusz M. Drzewiecki. Jun 73, 30p Rept no. HDL-TR-1622

Descriptors: (*Strain gages, *Fluidics), (*Explosive materials, Handling), Fluid amplifiers, Tensile properties, Compressive properties, Configuration, Design, Safety.
Identifiers: *Fluerics, *Load cells.

Fluidic load cells have been designed and developed by the Harry Diamond Laboratories, based on fluidic strain gage concepts evolved at these Laboratories. Applications for these fluidic type cells include force measurements in highly incendiary environments and direct control system operation on a pneumatic or hydraulic assembly line. The load cell consists of three main parts - a structural member to establish a relationship between load and deformation, a fluidic strain gage to produce a fluidic signal as a function of the deformation, and a three-stage laminar proportional amplifier gain block to raise the strain-gage output to a useful level. The load cells built have load ranges of about 0 to 20 kN with a discrimination of about 1 percent of full scale in compression; typical full-scale output pressure of the devices built is about 30 Pa at a 20 kN load. The output is fairly linear; thus, it can be used directly as indication of the load magnitude. Load-cell designs have been conceived, although not implemented for operation in tension and in both tension and compression. (Author)

AD-768 121/6GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center

A GENERALIZED TECHNIQUE FOR THE EVALUATION OF TEST EQUIPMENT,
Thomas G. Brown. May 73, 77p Rept no. USAMC-ITC-1-73-03

Descriptors: (*Test equipment, *Cost effectiveness), Maintainability, Checkout equipment, Reliability, Decision making, Costs.

The paper presents a generalized technique for the evaluation of test equipment. The problem arises when an evaluator is faced with the impinging question of how much automation in the test process is cost effective. Starting with the premise that all possible alternatives will achieve mission success, the paper develops a decision tradeoff study which will choose the most desirable test system. This procedure points out the important characteristics on which a decision of this nature should be based. The most important of these, cost, is further developed into a model which can be applied to a test system and determine its life cycle costs. The test equipment is analyzed on a cost basis as is the system to which it is applied. In this manner, the model only concerns itself with the cost aspects which are directly affected by the test equipment application such as design costs, personnel costs, hardware costs, and many others. It is a logical process with much versatility which will show the important contrasts between test systems, manual to fully automatic. (Author)

AD-768 178/6GA PC$3.00/MF$1.45
Royal Aircraft Establishment Farnborough (England)
PARTICLE SIZE MEASUREMENT BY IN-LINE HOLOGRAPHY.
Technical rept.,
T. W. Chubb, and J. B. Abbiss. Mar 73, 50p* Rept no. RAE-TR-72229 DRIC-BR-34763

Descriptors: (*Particle size, Measurement), Photographic techniques, Stereoscopic photography, Clouds, Fog, Aerosols, Great Britain.
Identifiers: *Holography.

The report is concerned with particle sizing by means of holography which provides a method of reproducing images of small particles dispersed in a volume without the severe difficulty of the limited depth of field of conventional photography and without the disturbance to the sample of collection methods. The size and position of particles may be determined by this method and by extension to double exposure techniques the velocity may also be found. In-line Fraunhofer systems are shown to be especially suitable for particle diameters in the 5 to 500 micron range, provided the maximum recording distance (particle to hologram) does not exceed certain limits set by the smallest particles. (Modified author abstract)

AD-768 182/8GA PC$6.50/MF$1.45
Texas A and M Univ College Station
A CLASSIFICATION SYSTEM FOR INTERFACE DEVICES USED WITH ELECTRONIC AUTOMATED TEST EQUIPMENT.
Research rept.,
Martin J. Burger. Mar 72, 86p
Master's thesis.

Descriptors: (*Test equipment(Electronics), Interfaces), Classification, Automation.

The paper develops a classification system for interface devices used with electronic automated test equipment. This system assigns alphabetic or numeric values to definitions of interface properties set down in this paper and logically arranges these values to form a classification number. The system can be applied to all interface devices and can be used in cataloging the devices. A complete classification code developed with this system contains information pertaining to the type of communication phenomena, form of communication phenomena, media, modulation techniques, and detection methods used by the interface device as well as certain physical characteristics used to describe the device. (Modified author abstract)

AD-768 189/3GA PC$8.25/MF$1.45
Texas A and M Univ College Station
SURFACE TEMPERATURE INDICATORS AS A PRACTICAL MEANS OF FAULT ISOLATION IN ELECTRONIC EQUIPMENT.
Master's thesis,
Fred F. McClintic. Mar 72, 125p*

Descriptors: (*Electronic equipment, Test methods), (*Test methods, Temperature sensitive elements), Coatings, Surface temperatures, Analysis of variance, Failure(Electronics), Visual inspection, Theses.
Identifiers: *Fault isolation.

The report proposes and analyzes a new method of reducing fault isolation times; fault isolation using surface temperature indicators. For less than 0.2 cents per component, each component in an electronic system can be coated with a surface temperature indicator which will melt or change color when the component is overstressed or when the failure rate of that component exceeds a predetermined limit. (Modified author abstract)

AD-768 209/9GA PC$3.00/MF$1.45
Army Test and Evaluation Command Aberdeen Proving Ground Md
FUELS AND LUBRICANTS.
Final rept. on test operations procedure.
30 Oct 73, 28p Rept no. TOP-2-2-701
Supersedes AD-876407.

Descriptors: (*Fuels, *Test methods), (*Lubricants, Test methods), Compatibility, Sampling, Physical properties, Performance(Engineering), Chemical analysis, Fuel oils, Gasoline, Endurance, Chemical properties, Oils, Metals.
Identifiers: *Performance evaluation, Wear tests.

The report describes a method for evaluating Army-procured fuel and lubricant compatibility with Army vehicles and a method for sampling and spectrometric analysis of lubricants for symptoms of metal wear or contamination. It describes equipment and facilities and basic test requirements. Included are test procedures for octane and cetane requirements; engine, transmission, and vehicle compatibility; cold starting; hydraulic, gear oil, and grease systems; and spectrometric oil analysis. A chart of typical fuels and lubricants for Army ground vehicles and equipment is included. (Modified author abstract)

AD-768 298/2GA PC$3.00/MF$1.45
Naval Ship Research and Development Center Annapolis Md
FACTOR INFLUENCING ACCELEROMETER MEASUREMENT CAPABILITIES: A PRACTICAL MEASUREMENT GUIDE,
R. W. Miller. Sep 73, 47p Rept nos. NSRDC-3941, NSRDC-27-414

Descriptors: (*Accelerometers, Performance(Engineering)), Piezoelectric Transducers, Accuracy, Reliability, Sensitivity.
Identifiers: Performance evaluation, Dynamic response.

After a brief review of the electromechanical functioning of the piezoelectric accelerometer, factors affecting its dynamic response characteristics and therefore the validity of vibration measurement are discussed. Consideration is given to variables such as shunt resistance and capacitance, mounting methods, base bending, cable noise, groundloop currents, and environmental effects. Approved accelerometer mounting techniques that will ensure the accuracy and repeatability of the measurement are also described. (Author)

AD-768 324/6GA PC$7.75/MF$1.45
New York Univ Bronx School of Engineering and Science
ELECTRONIC TEST EQUIPMENT NOMENCLATURE ASSIGNMENTS. VOLUME I. SYSTEMS.
Jun 73, 371p
Contract N00039-68-C-3579
See also Volume 2, Part 1, AD-768 325.

Descriptors: (*Test equipment, Catalogs), Test sets, Test equipment(Electronics), Classification.
Identifiers: Nomenclature.

The document is a dictionary type listing, of military test equipment in alphanumerical order by Type Designation, together with item name, a brief functional description, manufacturer and model (part) number, original agency or requester (the cognizant activity), applicable military specification, and type designation of equipment, sued with or part of the item described. Volume I covers systems.

AD-768 325/3GA PC$9.00/MF$1.45
New York Univ Bronx School of Engineering and Science
ELECTRONIC TEST EQUIPMENT NOMENCLATURE ASSIGNMENTS. VOLUME II. GROUPS AND UNITS. PART I. A TO N.
Jun 73, 473p
Contract N00039-68-C-3579
See also Volume 1, AD-768 324 and Volume 2 Part 2, AD-768 326.

Descriptors: (*Test equipment, Catalogs), Test sets, Test equipment(Electronics), Classification.
Identifiers: Nomenclature.

The document is a dictionary type listing, of military test equipment in alphanumerical order by Type Designation, together with item name, a brief functional description, manufacturer and model (part) number, original agency or requester (the cognizant activity), applicable military specification, and type designation of equipment, used with or part of the item described. Volume two Part one covers A to N.

AD-768 326/1GA PC$9.75/MF$1.45
New York Univ Bronx School of Engineering and Science
ELECTRONIC TEST EQUIPMENT NOMENCLATURE ASSIGNMENTS. VOLUME II. GROUPS AND UNITS. PART 2. O TO Z.
Jun 73, 518p
Contract N00039-68-C-3579
See also Volume 2 Part 1, AD-768 325 and Volume 1, AD-768 324.

Descriptors: (*Test equipment, Catalogs), Test sets, Test equipment(Electronics), Classification.
Identifiers: Nomenclature.

The document is a dictionary type listing, of military test equipment in alphanumerical order by Type Designation, together with item name, a brief functional description, manufacturer and model (part) number, original agency or requester (the cognizant activity), applicable military specification, and type designation of equipment, used with or part of the item described. Volume two part two covers O to Z.

AD-768 348/5GA PC$7.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
A 1 KEV ION PROBE FOR THIN FILM ANALYSIS.
Master's thesis,
Fred H. Porter, III. 13 Jun 73, 98p Rept no. GE/EE/73S-5

Descriptors: (*Spectrum analyzers, *Mass spectroscopy), Probes(Electromagnetic), Design, Ion bombardment, Films, Impurities, Systems engineering, Theses.

Identifiers: *Mass spectrometers, Thin films.

A 1 KeV ion probe analyzer was designed and assembled for thin film analysis. The major components include a QUAD 25OB quadrupole mass spectrometer manufactured by Electronic Associates, Inc., and a Phi 04-131 sputter ion gun manufactured by Physical Electronics Industries, Inc. The distinctive features of the analyzer are its low energy ion source and its ability to sputter and analyze conducting and nonconducting materials equally well. The instrument can resolve impurity densities of one part in 1000 from sputtered secondary ions, and the etch rate achieved is 800 angstroms per hour on a permalloy target. The report contains sample spectra and the necessary details to use it as an operating manual for the analyzer. Recommendations include modifications for improved sensitivity, establishment of measurement standards, and further work for time-of-flight and ion energy measurements. (Author)

CEA-CONF-2211/GA PC$3.00/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
NONDESTRUCTIVE CONTROL THROUGH FOUCAULT CURRENTS USING THE PRINCIPLE OF FREQUENCY SCANNING. DESCRIPTION OF THE TECHNIQUES AND EXPERIMENTAL RESULTS.
R. DuJardin, A. Samoel, and J. P. Dufayet. 1972, 11p CONF-721085-1
In French. U.S. Sales Only.

Descriptors: (*Tubes, *Nondestructive testing), (*Fuel cans, Nondestructive testing), Automation, Foucault current, Quality control.

For abstract, see NSA 28 04, number 10549.

IPPJ-DT-28/GA PC$4.00/MF$1.45
Nagoya Univ. (Japan). Inst. Of Plasma Physics.
TRIAL MANUFACTURE OF SCHULZ-TYPE IONIZATION VACUUM GAUGE AND ITS CHARACTERISTICS.
S. Ootsuki, and K. Akaishi. Oct 71, 8p
In Japanese. U.S. Sales Only.

Descriptors: (*Vacuum gages, *Performance testing), Filaments, High vacuum, Ionization, Iridium, Thorium oxides.

For abstract, see NSA 28 04, number 08116.

LA-5119/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ELECTRONIC CONTROL SYSTEM FOR TEMPERATURE REGULATION.
L. J. Burnett. May 73, 3p
Contract W-7405-eng-36

Descriptors: (*Gas flow, *Temperature control), (*Nuclear magnetic resonance, Temperature control), Control systems, Low temperature, Medium temperature, Nitrogen, Pulses.

For abstract, see NSA 28 04, number 10582.

N73-29431/6GA PC$3.25/MF$1.45
Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario). Biosciences Div.
RESPONSE OF THE GLOBE THERMOMETER.
L. A. Kuehn. Jan 73, 21p DCIEM-859
Contract PROJ. 93-10-141

Descriptors: *Dynamic response, *Heat transfer coefficients, *Thermometers, Mathematical models, Performance, Thermodynamic properties.

For abstract, see STAR 1120

N73-29456/3GA PC$3.00/MF$1.45
Laboratorio de Acustica e Sonica, Sao Paulo (Brazil).
ULTRASONIC INSPECTION AND EXAMINATION OF LARGE SIZE CAST STEEL RING PRIOR TO MACHINING.
L. X. Nepomuceno, M. F. Barbosa, and P. G. Lima. 29 Dec 72, 6p TR-7212.624
In Portuguese; English Summary.

Descriptors: *Ring structures, *Steels, *Ultrasonics, Deformation, Echoes, Ultrasonic machining.

For abstract, see STAR 1120

N73-29461/3GA PC$3.00/MF$1.45
Laboratorio de Acustica e Sonica, Sao Paulo (Brazil).
ULTRASONIC INSPECTION AND CONTROL OF LAMINATED STEEL DISC.
L. X. Nepomuceno, and M. F. Barbosa. 20 Feb 73, 6p TR-73-2-640
In Portuguese; English Summary.

Descriptors: *Disks (Shapes), *Laminates, *Steels, *Ultrasonic tests, Depth measurement, Nondestructive tests, Photographic measurement.

For abstract, see STAR 1120

N73-29462/1GA PC$3.25/MF$1.45
Defence Standards Labs., Maribyrnong (Australia).
ULTRASONIC TESTING OF CLOSURES FOR ROCKET HEAT 66 MM L1A2.
J. H. Cole. May 73, 21p TM-52

Descriptors: *Closures, *Microcracks, *Ultrasonic tests, Bulkheads, Intermetallics, Surface cracks, Temperature inversions.

For abstract, see STAR 1120

PAT-APPL-237694/GA PC$3.50/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
MONITORING ATMOSPHERIC POLLUTANTS WITH A HETERODYNE RADIOMETER TRANSMITTER RECEIVER.
Patent Application.
R. T. Menzies. Filed 24 Mar 72, 29p NASA-CASE-NPO-11919-1,
Contract NAS7-100
Subm-Sponsored by NASA.
Goverament-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Air pollution, *Airborne equipment, *Infrared lasers, *Transmitter receivers, Atmospheric composition, Atmospheric optics, Light transmission, Patent applications.

A method for monitoring atmospheric pollutants with a heterodyne radiometer transmitter-receiver is discussed. The receiver obtains absorption data from the atmosphere to determine the presence, concentration, and altitude profile of the pollutants. The system depends on a laser beam transmitted downward from an airborne platform. The particular pollutant and its absorption wavelength to be measured are selected by the laser beam wave length. The reflections of the transmitted laser beam are measured to determine the amount and type of pollution.

PATENT-3 712 131/GA Not available NTIS
Department of the Navy Washington D C
HEAT FLUX INDICATOR.
Patent,
Warren K. Smith. Filed 22 Feb 71, patented 23 Jan 73, 7p Rept nos. PAT-APPL-117 473,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Temperature sensitive elements, *Patents), (*Fire alarm systems, Temperature sensitive elements), Fires, Sensors, Heat flux, Telemeter systems.
Identifiers: PAT-CL-73-190-H.

The patent describes an inexpensive passive heat flux sensor and recording device for measurements in fires or other hot environments comprising a pair of small spring steel strips of different thickness, heat treated to maximum hardness. The strips are fastened together back-to-back with asbestos paper insulation between them, or they are mounted side-by-side on a piece of asbestos millboard. After immersion in a fire the two steel pieces are tested for Rockwell C hardness, which is referred to a set of charts prepared with the aid of a computer program. The charts give the average heat flux and the time from beginning of exposure to approximately the maximum temperature of the steel pieces. It is also possible to calculate the approximate flame temperature from the data.

PATENT-3 714 552/GA Not available NTIS
Department of the Navy Washington D C
METHOD OF REDUCING ERRORS ARISING FROM THE RADIO FREQUENCY OSCILLATOR SYSTEM OF OPTICALLY PUMPED MAGNETOMETERS.
Patent,
Louis R. Hirschel. Filed 19 Jan 72, patented 30 Jan 73, 10p Rept nos. PAT-APPL-218 970,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Magnetometers, *Patents), Pumping(Optical), Frequency shift, Errors, Radiofrequency oscillators, Helium.
Identifiers: PAT-CL-324-0-5-R.

The patent relates to an optically pumped magnetometer using the phenomenon of multiple photon transitions in helium. Multiple transition makes possible the use of two oscillators of any frequency in an He magnetometer, whose total quantum energy and angular momentum are equivalent to the values required by single-field irradiation. A field at frequency f sub 1 is generated by means of a crystal-controlled oscillator and a field at frequency f sub 2 is generated by a voltage-controlled oscillator such that f sub 1 >> f sub 2, whereby a circularly-polarized field may be generated by the crystal-controlled oscillator, which virtually eliminates the Bloch-Siegert effect and results in a very stable system. To conserve angular momentum in such a system, the two oscillators have their coils mounted perpendicular to one another.

PATENT-3 714 830/GA Not available NTIS
Department of the Navy Washington D C
WATER SAMPLING DEVICE.
Patent,
Robin S. Keir. Filed 26 Mar 71, patented 6 Feb 73, 4p Rept nos. PAT-APPL-128 395,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Water, *Samplers), (*Patents, *Samplers), Sea water.
Identifiers: PAT-CL-73-425-4-R.

The patent concerns a water sampling device using essentially a laboratory-type container preferably an 'Erlenmeyer' flask, which has openings at the top and bottom thereof to permit the passage of water therethrough as the device is lowered to the desired depth. The flask is of a conventional design modified to the extent of cutting the opening in the base. Means are provided to close each opening at the selected water depth to capture a water sample at that level. When the device is raised to the surface the necessary laboratory analysis can be conducted in the sample container without the need for transferring the sample, minimizing the likelihood of contamination.

PATENT-3 715 654/GA Not available NTIS
Department of the Navy Washington D C
CRYSTAL MAGNETOMETER AND GRADIOMETER.
Patent,
John F. Scarzello. Filed 4 Jun 70, patented 6 Feb 73, 7p Rept nos. PAT-APPL-43 330,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Magnetometers, *Patents), Magnetic fields, Paramagnetic materials, Paramagnetic resonance.
Identifiers: PAT-CL-324-5-R.

The patent describes a sensor for measuring component magnetic fields using a first magnetic field to be measured, and a perpendicular second magnetic field. The fields are modulated by first and second coils individually wound around first and second nonmagnetic cores. The nonmagnetic cores are hollow and intersect. A paramagnetic crystal is located at the intersection of the cores and is oriented to provide a maximum nuclear magnetic resonance signal. In one embodiment, a magnetometer is employed which includes a sweep generator, marginal oscillator, feedback loop and the sensor for determining the magnitude of the component magnetic field to be measured. An alternative embodiment uses a sweep generator, marginal oscillator, differentiating network and the sensor for determining the point gradient of the field to be measured.

PATENT-3 716 711/GA Not available NTIS
Department of the Navy Washington D C
WATER LEVEL GAUGE USING NEUTRON SOURCE.
Patent,
Bernhardt D. Olesen. Filed 18 Jun 71, patented 13 Feb 73, 4p Rept nos. PAT-APPL-154 321,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Liquid level gages, *Patents), (*Salvage, Neutron detectors), Underwater object locators.
Identifiers: PAT-CL-250-43-5, *Marine salvage.

The invention is directed to providing a hand held device for indicating the level of a fluid in a sunken vessel and includes a source of radioactive energy held against the vessel's outer surface. Neutrons, emitted from the energy source, pass freely through the steel wall and internally carried thermal insulation layer, but, are moderated if they enter a water medium and partially backscattered through the foam and steel. A particle detector, carried near the energy source, receives the backscattered particles and provides representative signals to an indicator. By noting the visual representation provided by the indicator, a diver is able to determine whether or not there is water in the compartment and to exactly what level it has reached. The prime object of the invention is to provide a device for indicating the level of a fluid in a sealed container. Another object is to provide a device for indicating the level of flooded water not requiring any hull penetrators.

PATENT-3 720 093/GA Not available NTIS
Department of the Navy Washington D C
CARBON DIOXIDE INDICATING METER.
Patent,
George Herbert Gill. Filed 3 Dec 70, patented 13 Mar 73, 5p Rept nos. PAT-APPL-94 660,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Carbon dioxide, *Gas detectors), (*Patents, Gas detectors), Thermistors.
Identifiers: PAT-CL-73-27-R.

The invention is directed to providing an apparatus for rapidly indicating CO2 concentration within an enclosure by comparing the known thermal conductivity of a reference gas to the unknown thermal conductivity of a gas sample taken from the enclosure. A detector housing shaped with a lateral passageway passes the gas sample to a cavity housing a first thermistor. The detector housing also is shaped with a chamber enclosing a second thermistor and filled with the reference gas. The difference between the impedance of the first thermistor with respect to the impedance of the second thermistor, as caused by the gases' having different thermal conductivities, unbalances an electrically connected resistance bridge to transfer a signal to an indicator which is representative of the CO2 concentration in the gas sample.

PATENT-3 720 101/GA Not available NTIS
Department of the Navy Washington D C
AUTOMATIC SPRING RATE PLOTTER.
Patent,
Herman R. Kollmeyer. Filed 23 Jul 71, patented 13 Mar 73, 4p Rept nos. PAT-APPL-165 594,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Test equipment, Springs), (*Patents, Test equipment), Recording systems, Automatic, Force(Mechanics), Deflection, Graphics.
Identifiers: PAT-CL-73-161.

The patent describes an apparatus for automatically measuring and plotting the force-deflection curve of springs, especially small springs on which forces are to be applied in order of 0.1 to 100 grams.

PATENT-3 761 708/GA Not available NTIS
Department of the Interior, Washington, D.C.
ELECTRON SUPPRESSOR GRID FOR A MASS SPECTROMETER.
Patent,
Wallace W. Roepke, and Kenneth G. Pung. Filed 8 Oct 71, patented 25 Sep 73, 4p PAT-APPL-189 472, DOCKET/MIN-1258/1910
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Mass spectrometers, *Patents), Suppressors, Electrons, Vacuum chambers.
Identifiers: Electron suppressor grids, PAT-CL-250-41-9-G.

The patent describes a suppressor grid positioned between an ionizer and an ion gauge in a mass spectrometer. The suppressor grid prevents electron interference with the ion gauge for operation at ultrahigh vacuum levels.

SLA-73-151/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ISODENSITOMETER APPLICATIONS.
R. W. Mottern. Apr 73, 20p

Descriptors: (*Densitometers, *Industrial radiography), Films, Recording systems.

For abstract, see NSA 28 04, number 10617.

SLA-73-422/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ERROR SOURCES IN ACCELERATION MEASUREMENTS.
P. L. Walter. May 73, 23p

Descriptors: (*Accelerometers, *Errors), Crystals, Ferroelectric materials, Quartz, Semiconductor devices, Stability, Strain gages, Velocity.

For abstract, see NSA 28 04, number 10619.

SLA-73-5501/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
SANDIA APPROACH TO ELECTRON PROBE AUTOMATION.
W. F. Chambers. 3p CONF-730809-1

Descriptors: (*Probes, *Electron beams), (*Control systems, *Pdp computers), Analog computers, Automation, Cathode ray tubes.

For abstract, see NSA 28 06, number 15058.

UCRL-51362/GA PC$5.45/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
RESULTS OF THE 1972 SURVEY ON TRACK REGISTRATION.
R. V. Griffith. 15 Mar 73, 105p
Contract W-7405-Eng-48

Descriptors: Data, Data acquisition, Dielectric track detectors, Fission fragment detection, Ion detection, Readout systems, Reviews.

For abstract, see NSA 28 06, number 12889.

UCRL-74566/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
DIFFERENTIAL THERMAL ANALYSIS APPARATUS FOR USE AT CRYOGENIC TEMPERATURES.
E. Catalano, J. A. Rinde, and J. C. English. 13 Feb 73, 17p CONF-730805-1

Descriptors: (*Differential thermal analysis, *Measuring instruments), Low temperature, Very low temperature.

For abstract, see NSA 28 05, number 12596.

UCRL-74607/GA PC$4.25/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
ACOUSTIC EMISSION FROM FORMATION AND ADVANCEMENT OF CRACKS.
C. A. Tatro, R. G. Liptai, and D. W. Moon. 5 Mar 73, 45p CONF-730605-1

Descriptors: (*Solids, Acoustic emission testing), (*Acoustic emission testing, *Stress corrosion), (*Iron base alloys, Stress corrosion), Cracks, Embrittlement, Stresses.

For abstract, see NSA 28 05, number 12597.

14C. Recording Devices

AD-767 883/2GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
NONLINEAR VIBRATION OF MOVING STRIPS,
P. D. Dotsenko. 19 Sep 73, 14p Rept no. FTD-HT-23-191-74
Edited trans. of Samoletostroenie i Tekhnika Vozdushnogo Flota (USSR) n25 p123-126 1971, by Kathleen L. Dion.

Descriptors: (*Magnetic tape, Vibration), Magnetic recording systems, Motion, Conveyors, Tapes, Nonlinear differential equations, USSR.
Identifiers: Tape transports, Translations.

A strong relationship between the rate of longitudinal motion and the frequency, vibration amplitude and boundary of the instability region is observed when designing tape transports, and when considering natural, forced and parametric vibrations. A feature of this problem is the presence of nonlinear kinematic damping, which considerably affects the behavior of the amplitude and frequency of the vibrations.

N73-29090/0GA PC$3.50/MF$1.45
Aeronautical Research Labs., Melbourne (Australia).
DIGITAL REPRODUCING AMPLIFIERS FOR A MAGNETIC TAPE RECORDER.
K. F. Fraser, and U. R. Krieser. Sep 72, 27p
ARL/ME-337

Descriptors: *Amplifiers, *Data recording, *Digital systems, *Magnetic tapes, Airborne equipment, Data acquisition, Data processing, Data reduction.

For abstract, see STAR 1120

14D. Reliability

AD-767 710/7GA PC$3.00/MF$1.45
California Univ Berkeley Operations Research Center
OPTIMAL ALLOCATIONS IN THE CONSTRUCTION OF K-OUT-OF-N RELIABILITY SYSTEMS.
Research rept.,
Sheldon M. Ross, Cyrus Derman, and Gerald J. Lieberman. Sep 73, 26p Rept no. ORC-73-17
Contracts N00014-69-A-0200-1036, DA-31-124-ARO(D)-331

Descriptors: (*Reliability, Optimization), Mathematical models, Convex sets, Probability density functions, Dynamic programming, Theorems.
Identifiers: Allocation models, Investments.

The authors want to build n components so as to form an n component system which will function if at least k of the components function. If x dollars is invested in building a component, then this component will function with probability P(x). Given a total income of A dollars, the problem of interest is to determine how much money should be invested in each component so as to maximize the probability of attaining a functioning system. This problem is considered both in the sequential and in the nonsequential case. Conditions under which it is optimal to allocate A/n units at each stage, when A is your initial fortune, are presented. The special case P(x) = min (x,1) is also considered in detail. (Author)

AD-768 119/0GA PC$5.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
A COMPARATIVE ANALYSIS OF RELIABILITY GROWTH MODELS,
Michael F. Bauman. May 73, 60p Rept no. USAMC-ITC-1-73-01

Descriptors: (*Reliability, *Statistical analysis), Mathematical models, Probability density functions, Least squares method.
Identifiers: Bayesian analysis, Parameter estimation, Growth models, Maximum likelihood estimation, Failure rate functions.

Reliability growth modeling is a methodology which seeks to monitor reliability improvement of a system under development. When competently used, reliability growth models can assist program management in making decisions pertinent to the accomplishment of development objectives. The models available in the literature are diverse, both in structure and technique. To facilitate the proper use of reliability growth models, the paper provides a qualitative study of selected growth models. A representative collection of models are catalogued using the following classifications: (1) Deterministic, (2) Parametric, (3) Bayesian, and (4) Special. The nature of each model is discussed with particular reference to model derivation, physical structure, test data requirements, and application by the model user. (Author)

AD-768 125/7GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
COMPARATIVE ANALYSIS OF FAULT ISOLATION PROCEDURES,
Frank Albin Gasiorowski. Mar 73, 77p Rept no. USAMC-ITC-1-73-09

Descriptors: (*Reliability, Systems engineering), Malfunctions, Number theory, Information theory, Probability, Mathematical models.
Identifiers: Fault detection, Fibonacci numbers, Fault diagnosis, Fault isolation.

The research is a comparative analysis of four analytic fault isolation procedures. The procedures are the half-split procedure, the least cost testing sequence, the information approach, and the probability approach for complex systems. (Modified author abstract)

AD-768 138/0GA PC$10.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
A COMPARATIVE ANALYSIS OF VARIOUS RELIABILITY ALLOCATION TECHNIQUES,
Dale L. Williams, and Roger J. McNichols. May 73, 158p Rept no. USAMC-ITC-1-73-28

Descriptors: (*Reliability, Optimization), Mathematical models, Redundant components, Dynamic programming, Costs, Programming(Computers).
Identifiers: Allocation models, Failure rate functions, Lagrange multipliers.

The paper presents various reliability allocation techniques which seek to satisfy a pre-assigned reliability goal. The assumptions, applications, and drawbacks of each method are stated along with a discussion of the mechanics involved in the solution algorithms. An illustrative example is also presented to show the application of each technique. Finally, two tables are generated to aid in the selection of specific techniques corresponding to different conditions. These tables are intended only to direct the user to the method most likely to fit a given allocation problem. (Author)

AD-768 154/7GA PC$3.50/MF$1.45
Army Tank-Automotive Command Warren Mich
EVALUATION OF ACCURACY OF MEDIAN RANKS AND MEAN RANKS PLOTTING FOR RELIABILITY ESTIMATION USING THE WEIBULL DISTRIBUTION.
Technical rept.,
Salvatore B. Catalano. Jun 73, 73p Rept no. TACOM-TR-11808

Descriptors: (*Reliability, *Statistical analysis), Probability density functions, Monte Carlo method, Computer programs, Curve fitting, Graphics.
Identifiers: *Weibull density functions, Median(Statistics), Mean, Parameter estimation.

Estimates of the Weibull distribution parameters were made employing the mean ranks estimator; the estimates were repeated using the median ranks estimator. These estimates were compared to known values of the Weibull distribution parameters. This made it possible to compare the results obtained using either estimator (mean ranks or median ranks) and to determine the relative merits of using either estimator. The study made use of a digital computer and employed Monte-Carlo techniques to simulate Weibull distributed failure times. These failure times may represent tank-automotive component failures. (Author)

AD-768 184/4GA PC$6.25/MF$1.45
Texas A and M Univ College Station
DETERMINATION OF THE OPTIMUM REPLACEMENT TIME FOR A SYSTEM COMPOSED OF 'N' INDEPENDENTLY FAILING SUBSYSTEMS WHOSE FAILURE RATES FOLLOW THE TRADITIONAL 'BATH-TUB' CURVE.
Master's thesis,
William F. Currotto. May 72, 83p

Descriptors: (*Reliability, Mathematical models), (*Replacement theory, Optimization), Costs, Probability density functions, Decision making, Computer programs, Statistical analysis, Theses.
Identifiers: Failure rate functions, Parameter estimation, Weibull density functions, Histograms.

The purpose of the paper is to offer a method for estimating the optimum system replacement time for a system composed of 'N' unlike subsystems whose failure rates are similar to those of the traditional 'bath-tub failure rate curve. This is done for two particular situations. First, before a new system is placed in the field, or after it is already operating; an estimate of the optimum replacement time can be determined. Second, when an expensive repair must be made near the system's prescribed replacement time, it can be determined whether it is more economical to replace the system then, or repair the system and keep it in operation. The paper also includes computer programs to calculate the optimum replacement time for both the above situations, examples, and an analysis of parameter estimation. (Author)

AD-768 186/9GA PC$10.50/MF$1.45
Texas A and M Univ College Station
A COMPARATIVE STUDY IN THE RELIABILITY ALLOCATION PROCESS.
Master's thesis,
Tony Dale Cox. May 72, 167p

Descriptors: (*Reliability, Mathematical models), Redundant components, Statistical analysis, Probability density functions, Computer programs, Theses.
Identifiers: Allocation models.

The purpose of the report was to investigate the differences in system reliability and system cost in the reliability allocation process between an independent assumption among operating components of an active-parallel-exponential system and a dependent assumption among the same operating components. Reliability expressions for two and three element active-parallel-exponential, dependent, and independent systems were calculated. Using a steepest ascent computer algorithm a computer program was developed which maximized the system reliability subject to a cost constraint. Examples were also presented in this research report to help point out major differences in system reliability and system cost that can occur. (Author)

AD-768 188/5GA PC$3.50/MF$1.45
Texas A and M Univ College Station
ANALOG COMPUTER TECHNIQUES FOR THE CALCULATION OF TRANSIENT AVAILABILITY.
Research rept.,
Edward N. Sowell, Jr. Mar 72, 73p
Master's thesis.

Descriptors: (*Reliability, Mathematical models), Availability, Analog computers, Learning curves, Maintainability, Stochastic processes, Matrix algebra.
Identifiers: Markov chains, Failure rate functions.

The paper develops analog computer techniques for the calculation of time dependent availability. It shows how transient availability problems formerly solved by Markov chain theory along with Laplace transforms and matrix algebra can more easily be solved on the analog computer. The resulting analog technique is then modified to allow for systems with nonconstant failure and repair rates. The nonconstant rates chosen for the purpose of illustration are the bathtub failure rate and learning repair rate curves. Existing methods for transient availability calculation assume that the system operates whenever it is operable and that repairs begin as soon as failure occurs. Many systems have utilization and work force policies which do not meet this assumption. An analog technique is developed in the paper for handling systems of this nature. (Author)

AD-867-379/GA PC$7.25/MF$1.45
Rome Air Development Center, Griffiss AFB, N.Y.
COMPUTERIZED RADC RELIABILITY NOTEBOOK (GE/645/TSS/BASIC).
Final technical rept.,
George W. Lyne. Mar 70, 102p RADC-TR-70-14
Distribution Limitation now Removed.

Descriptors: (*Reliability(Electronics), Computer Programs), Failure(Electronics), Life Expectancy, Malfunctions, Probability, Stresses, Potentiometers, Capacitors, Electric connectors, Electric relays, Electric switches, Semiconductor devices, Microminiaturization(Electronics), Handbooks.

Computer programs which enable the reliability engineer to mechanically apply the 'RADC Reliability Notebook,' Volume II, September 1967, in obtaining the failure rate of piece parts are presented. (Author)

SLA-73-404/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
COMPLETE RELIABILITY PROGRAM AS APPLIED AT SANDIA LABORATORIES.
J. O. Muench. May 73, 11p

Descriptors: (*Sandia laboratories, *Reliability), (*Control equipment, Reliability), Engineering, Management.

For abstract, see NSA 28 05, number 12581.

14E. Reprography

AD-767 897/2GA PC$3.00/MF$1.45
Air Force Avionics Lab Wright-Patterson AFB Ohio
MACROFOCAL PARABOLAS FOR NIGHT PHOTOGRAPHY.
Technical rept.,
John A. Van Workum, and Steven C. Parker. Jun 73, 46p Rept no. AFAL-TR-73-115

Descriptors: (*Night photography, *Camera components + accessories), Aerial cameras, Reflectors, Design, Optical properties, Parabolic bodies.

Reflector contours called macrofocal parabolas are derived for use in aerial photography. These contours represent the most efficient reflector designs possible for a given aperture, field angle and finite sized light source. In addition, they give the smallest possible aperture which will reflect 100% of the emitted light into a given beam size. By reducing the efficiency, the reflector contours can be adjusted to tailor the radiant intensity distribution. (Author)

AD-767 908/7GA PC$4.25/MF$1.45
Fairchild Space and Defense Systems Syosset N Y
KA-56 PANORAMIC CAMERA MODIFICATION.
Final technical rept. Jun 72-Mar 73,
J. M. Daszkowski, E. J. O'Donnell, and R. M. Sweet. Aug 73, 120p Rept no. FSDS-ED-AC-39 RADC-TR-73-218
Contract F30602-72-C-0374

Descriptors: (*Panoramic cameras, *Photogrammetry), Rotating-prism cameras, Aerial cameras, Performance(Engineering), Prisms(Optics).

The report describes a research and development project which is contributing considerably to the future metric use of a rotary prism, moving film panoramic camera. It contains a detailed description of the necessary modifications which are implemented on the KA-56 Panoramic Camera, and discusses the technical advancements which were made during the design, development, fabrication, and testing of the miniature state-of-the-art, solid state flash fiducial film marking system. (Modified author abstract)

N73-29484/5GA PC$7.50/MF$1.45
Forschungsinstitut fuer Hochfrequenzphysik, Werthhoven (West Germany).
PROBLEMS OF HOLOGRAPHIC MAPPING IN THE MICROWAVE RANGE PROBLEME BEI DER HOLOGRAPHISCHEN ABBILDUNG IM MIKROWELLENBEREICH.
K. Magura. Dec 72, 108p REPT-6-72
Subm-Sponsored by Bundesmin. Fuer Verteidigung.
Language in German.

Descriptors: *Holography, *Microwave imagery, *Resolution, *Wave front reconstruction, Antenna arrays, Coherent electromagnetic radiation, Computer techniques, Rotating bodies, Translational motion.

For abstract, see STAR 1120

15. MILITARY SCIENCES

15B. Chemical, Biological, and Radiological Warfare

AD-768 096/0GA PC$2.75/MF$1.45
Edgewood Arsenal Aberdeen Proving Ground Md
NONHERBICIDAL DEFOLIANTS. II. VOLUME AND LEAF SURFACE STUDIES WITH ENDOTHALL/ETHEPHON.
Technical rept. May-Oct 72,
John P. Sterrett, William E. Tozer, Gerald R. Leather, and David T. Webb. Sep 73, 14p Rept nos. EA-TR-4786, EC-TR-73001
See also AD-765 484.

Descriptors: (*Defoliants, Surface-active substances), Plants(Botany), Trees, Plant tissue, Control, Chemicals, Effectiveness.
Identifiers: *Endothall, *Ethephon, Phosphonic acid/chloroethyl, Surfactants, Phaseolus vulgaris, Fraxinus americana, Polysorbate 20.

Experiments were designed to determine if the combination of 7-oxabicyclo(2,2,1)heptane-2,3-dicarboxylic acid (endothall and (2-chloroethyl) phosphonic acid (ethephon), a nonherbicidal defoliant, applied at volumes less than runoff would effectively defoliate bean (Phaseolus vulgaris L. cv. Red Kidney) and white ash (Fraxinus americana L.) seedlings and to compare the abscission response of bean and ash to lower and upper leaf surface treatments of endothall/ethephon. Defoliation of bean and ash from endothall/ethephon volumes of one-half or one-quarter runoff was as effective as runoff. Lower leaf surface treatments on bean caused significantly more leaf drop than upper surface treatments and, although leaf abscission of white ash was no different from lower surface treatments than upper, it occurred faster. (Author)

15C. Defense

AD-768 065/5GA PC$11.25/MF$1.45
Army Foreign Science and Technology Center Charlottesville Va
TECHNOLOGY AND ARMAMENT. NUMBER 3, MARCH 1973.
16 Aug 73, 181p Rept no. FSTC-HT-23-192-74
Trans. of Tekhnika i Vooruzhenie (USSR) n3 Mar 73. The above journal is translated on a regular basis.

Descriptors: (*Armament, Reviews), (*USSR, Armament), Weapon systems, Small arms, Electronics, Communication systems.
Identifiers: Translations.

Articles written by Soviet military personnel are on weapon systems, communication systems, electronics and military training.

AD-768 066/3GA PC$10.25/MF$1.45
Army Foreign Science and Technology Center Charlottesville Va
ANTIAIRCRAFT DEFENSE HEARLD. NUMBER 4, APRIL 1973.
16 Aug 73, 162p Rept no. FSTC-HT-23-51-74
Trans. of Vestnik Protivovozdushnoi Obornoy (USSR) n4 Apr 73. The above journal is translated on a regular basis.

Descriptors: (*Antiaircraft defense systems, USSR), Reviews, Communication systems, Military training, Military organizations.
Identifiers: Translations.

Articles written by Soviet military personnel are on military training and communication systems.

AD-768 067/1GA PC$10.75/MF$1.45
Army Foreign Science and Technology Center Charlottesville Va
ANTIAIRCRAFT DEFENSE HERALD. NUMBER 10, OCTOBER 1972.
16 Jul 73, 172p Rept no. FSTC-HT-23-50-74
Trans. of Vestnik Protivovozdushnoi Oborony (USSR) n10 Oct 72. The above journal is translated on a regular basis.

Descriptors: (*Antiaircraft defense systems, USSR), Reviews, Military training, Combat readiness, Armament.
Identifiers: Translations.

Articles written by Soviet military personnel are on military training and armament.

AD-768 078/8GA Not available NTIS
Rand Corp Santa Monica Calif
WEAPONS ACQUISITION IN THE SOVIET UNION, UNITED STATES, AND FRANCE,
Arthur J. Alexander. Mar 73, 33p Rept no. P-4989
Availability: Paper copy available from the RAND Corp., Santa Monica, Calif. 90406. PC$1.00.

Descriptors: (*Weapon systems, Government procurement), USSR, United States government, France.

The report concerns primarily the aircraft and missile industries in the subject countries.

AD-768 246/1GA PC$11.25/MF$1.45
Army Foreign Science and Technology Center Charlottesville Va
ANTIAIRCRAFT DEFENSE HERALD. NUMBER 3, MARCH 1973.
25 Jul 73, 181p Rept no. FSTC-HT-23-255-74
Trans. of Vestnik Protivovzdushnoi Obornoy (USSR) n3 Mar 73.

Descriptors: (*Antiaircraft defense systems, USSR), Reviews, Military training, Military psychology, Combat readiness, Electronic countermeasures, Radio communication systems, Armed forces supplies.
Identifiers: Translations.

Articles written by Soviet military personnel mostly deal with military training, indoctrination and psychology, combat readiness, electronic countermeasures, and radio communication.

15E. Logistics

AD-767 661/2GA PC$6.50/MF$1.45
Naval Postgraduate School Monterey Calif
AUDITING ANALYSES OF TECHNOLOGICAL CHANGE.
Master's thesis,
David Lee Tye. Jun 73, 89p

Descriptors: (*Inventory control, *Cost effectiveness), (*Airframes, Maintenance), Naval equipment, Mathematical prediction, Correlation techniques, California, Computer programs,

Economics, Regression analysis, Accuracy, Theses.
Identifiers: *Technological change, *Auditing methods, Naval Air Rework Facility, Econometrics, Management information systems.

The objective of the study was to investigate a proposed method of auditing cost-effectiveness analyses of technological changes. The method is based on the use of cost functions to predict costs of operating with and without the improved technology. A comparison of these predicted costs indicates whether the technological change is cost-effective. Results of the comparison can then be used to audit more detailed analyses of the change. The investigation employed econometric techniques in a case study application of the method to a technological change which occurred at the Naval Air Rework Facility, North Island, San Diego, California. (Author)

AD-767 689/3GA PC$3.00/MF$1.45
Naval Postgraduate School Monterey Calif
ANALYTICAL MODELS FOR SERVMART INVENTORY CONTROL,
Technical rept.,
F. Russell Richards, and Larry R. Atkinson. Jun 73, 48p Rept no. NPS-55RH73061A

Descriptors: (*Inventory control, Supply depots), Stock level control, Costs, Computer programs, Mathematical models, Lead time, Naval procurement.
Identifiers: Naval supply centers, Self service stores, Servmarts.

Inventory policies for the control of items carried by the Naval Supply Centers at their retail self-service stores (SERVMARTS) are developed. The reorder-level, reorder-quantity procedures minimize ordering, holding and stockout costs subject to constraints on inventory investment and stockout risk. Examples are presented for random samples from three SERVMARTS in the San Diego area and comparisons are made with two policies presently in use. The comparisons show a large reduction in the number of orders placed per year with a reduction in total system costs. Also included are recommended procedures for determining both the budget for inventory investment and the range of items carried at the SERVMARTS. (Author)

AD-767 871/7GA PC$11.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
RISK ASSESSMENT.
Master's thesis,
Hamilton T. Lenox. Jun 73, 180p Rept no. GSA/MA-73-3

Descriptors: (*Armed forces procurement, Uncertainty), Statistical analysis, Decision theory, Probability density functions, Costs, Economics, Systems engineering, Theses.
Identifiers: *Risk, Bayes theorem, Parameter estimation, Network analysis(Management).

Risk assessment became an integral part of the DOD system acquisition process in 1969. The primary effort of the paper was directed at exploring past attempts to quantify risk, and while the qualitative measurement of risk is mentioned, it is not explored in any depth. An attempt is made to define or describe the manner in which risk analysis varies throughout the system acquisition life cycle and a methodology using Bayes' Theorem is presented for the quantification and updating of risk in an on-going program. The methods of estimating parameters and their usefulness in a formal analytical process are discussed. The probability density function best transmits the uncertainty associated with an estimate and lends itself more readily to the analytical techniques than other methods of estimation. (Modified author abstract)

AD-767 935/0GA PC$4.50/MF$1.45
Naval Ship Research and Development Center Bethesda Md
SEABORNE MOBILE LOGISTIC SYSTEM (SMLS) MAINTENANCE OPTIMIZATION MODEL USER'S MANUAL.
Final rept.,
Carol Yudkoff Marcus, and Michael Gray. Aug 73, 139p Rept no. NSRDC-4115

Descriptors: (*Computer programs, Instruction manuals), (*Logistics, Maintenance), (*Amphibious operations, Logistics), Operational readiness, Maintenance personnel, Tool kits, Naval vessels(Support), Spare parts, Strategic materials, Close support, Maintainability, Monte Carlo method.
Identifiers: SMLS(Seaborne Mobile Logistic System), Seaborne mobile logistic system, Logistics operations, Logistics management.

The maintenance optimization model is a computer simulation program designed to help determine optimal maintenance configurations and resource requirements for the maintenance subsystem of the Seaborne Mobile Logistic System (SMLS). In the model, failure/repair cycles for each end item in the Landing Force are simulated over the period of a specified mission, using event generations, queuing, and Monte Carlo techniques. Measures of effectiveness such as utilization statistics for the maintenance system configuration and availability of the end item in the Landing Force are computed. In addition, the effect of the maintenance configuration on the availability of end items in the Landing Force and on requirements for resources such as operational readiness floats (ORF), maintenance personnel, and tool sets, kits, and special equipment can be examined. The report contains a description of the computer program for the Maintenance Optimization Model, a user's guide for the program, a listing of the program, and sample output. (Author)

AD-767 946/7GA PC$4.50/MF$1.45
Center for Naval Analyses Arlington Va
AIRCRAFT FORCE PROJECTION MODEL. VOLUME I. USERS GUIDE TO AFPM,
Steven W. Klein, and Thomas H. Thoreen. Mar 73, 150p Rept no. CNA-Research Contrib-225 Contract N00014-68-A-0091

Descriptors: (*Naval aircraft, Inventory analysis), (*Inventory analysis, *Computer programs), Naval procurement, Mathematical prediction, Maintenance, Data processing systems, Instruction manuals.
Identifiers: Resource allocation, Force structure, FORTRAN.

The Aircraft Force Projection Model (AFPM) is a FORTRAN model which projects the Navy's aircraft inventory over a ten-year period and attempts to satisfy the operating requirements of a given set of forces with the projected operating inventory. This comparison of operating inventory and force requirements is the characteristic which sets the AFPM apart from most inventory projection models. The AFPM generates useful characteristics of the aircraft inventory such as projections of the age distribution, attrition quantities, pipeline requirements and rework requirements. (Author)

AD-768 031/7GA PC$3.00/MF$1.45
Rand Corp Santa Monica Calif
DESIGN TO PRICE FROM THE PERSPECTIVE OF THE UNITED STATES, FRANCE, AND THE SOVIET UNION,
Arthur J. Alexander. Feb 73, 9p Rept no. P-4967

Descriptors: (*Government procurement, Effectiveness), Selection, Factor analysis, Efficiency, Costs, United States, France, USSR, Weapon systems, Test methods, Management planning, Design, Curve fitting.
Identifiers: Design to cost analysis.

The report outlines how design to cost imposes constraints on the periphery of the development organization and gives to project managers the autonomy required to carry out the task. By substituting simple external constraints for detailed regulation it allows both the customer and the developer to operate more efficiently. It is a means of placing a weapons acquisition project, for example, on a more acceptable portion of the performance-cost curve.

AD-768 108/3GA PC$9.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
THE DEPARTMENT OF DEFENSE INDUSTRIAL MOBILIZATION PRODUCTION PLANNING PROGRAM IN THE UNITED STATES,
Theodore J. Panayotoff. Jul 72, 138p Rept no. USAMC-ITC-2-72-08

Descriptors: (*Mobilization, *Industries), (*Department of Defense, *Management planning), Reviews, Military strategy.

The paper is concerned with those aspects bearing on the maintenance of a production base and the ability on the maintenance of a production base and the ability of that base to respond initially to changes in requirements for munitions. In addition, the interrelation between these aspects and the hardware design are considered.

AD-768 122/4GA PC$1.45
Army Materiel Command Texarkana Tex Intern Training Center
ALLOCATION OF THE AVAILABILITY PARAMETERS REPAIR TIMES AND FAILURE RATES TO VARIOUS SYSTEM CONFIGURATIONS,
William C. Dates. May 73, 92p Rept no. USAMC-ITC-1-73-06
Availability: Available in microfiche copies only.

Descriptors: (*Armed forces supplies, *Reliability), (*Maintainability, Armed forces supplies), Military requirements, Maintenance, Costs, Mathematical models, Computer programs.
Identifiers: Failure rate functions, Lagrange multipliers, Allocation models.

The research is designed to provide cost-based mathematical optimization techniques which can be used to allocate repair times and failure rates at the component level for various system configurations. Techniques were developed which can be applied to series systems, series arrangements of one or more units made up of identical components in active parallel, and systems composed of a group of series components connected serially with one or more parallel units of identical components. The results of the research are a set of computer programs which can be used to perform the allocations at the component level of the system. The optimality of these allocations is based upon the use of Lagrange multipliers under an availability constraint which is imposed on the system. (Author)

AD-768 134/9GA PC$4.75/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
A SENSITIVITY ANALYSIS OF MILITARY STANDARD-471 TEST METHOD THREE,
Donald A. Swartz, and Roger J. McNichols. Mar 73, 54p Rept no. USAMC-ITC-1-73-22

Descriptors: (*Maintainability, *Military requirements), Test methods, Sensitivity, Statistical analysis, Probability density functions, Curve fitting, Graphics, Computer programs.
Identifiers: Weibull density functions, Lognormal density functions, *Sensitivity analysis.

Test Method Three of Military Standard-471 is a maintainability demonstration test plan which demonstrates the achievement of a specified equipment repair time. This test plan was designed

to be used when the distribution of corrective maintenance task times is lognormal. The report will conduct Test Method Three using simulated data from the Weibull distribution. Operating characteristic curves will be constructed to determine the sensitivity of Test Method Three to a Weibull distribution. The analysis concludes that there is a slight change in the alpha and beta risk when the distribution of corrective maintenance times fit the particular Weibull distributions presented in the report. However, the alpha and beta risk vary drastically when the specified equipment repair time is not selected according to the requirement of the test. (Author)

AD-768 135/6GA PC$7.50/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
THE DETERMINATION OF TIME DEPENDENT AVAILABILITY WHEN REPAIR TIMES ARE GOVERNED BY THE LEARNING CURVE,
David D. Thompson. Mar 73, 108p Rept no. USAMC-ITC-1-73-23

Descriptors: (*Maintenance, Mathematical models), Systems engineering, Monte Carlo method, Time, Learning curves, Simulation, Stochastic processes, Maintainability, Mathematical prediction, Computer programs.
Identifiers: Computerized simulation, Markov chains, Failure rate functions.

The research is designed to develop methods to predict system availability when repair times are governed by the learning curve. Two basic models are developed. The first is a modified form of the Markov chain model. The second model utilizes a Monte Carlo simulation. An expression for the expected repair rate is developed in order to use the modified Markov model. Tables to aid in determining the repair rate are included. (Modified author abstract)

AD-768 136/4GA PC$8.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
IMPLEMENTATION OF THE FEEDBACK CAPABILITY TO RISCA,
Robert J. Watts. May 73, 117p Rept no. USAMC-ITC-1-73-25

Descriptors: (*Armed forces procurement, Costs), Management planning, Probability, Decision making, Feedback, Computer programs, Statistical analysis.
Identifiers: RISCA computer program, *Cost analysis, Risk, PERT, Network analysis(Management), Logistics management.

The research is designed to expand the capabilities of the simulation computer program, RISCA (Risk Information System for Cost Analysis). RISCA has been developed for the risk analysis educational effort at the United States Army Logistics Management Center (ALMC). This computer program facilitates the analysis of systems that are representable by a general class of network structures by performing a Monte Carlo simulation of the system. Thus, RISCA provides the user with the capabilities of investigating the effects of modifying an acquisition system or comparing one acquisition system against alternate systems. RISCA's most apparent limitation, however, is its lack of a feedback capability. The purpose of this research will be to eliminate this limitation. An effort will also be made to revise the method of activity and event sequencing performed by the computer program during the simulation. This last change will be made to reduce the time to simulate systems with RISCA. The final success of expanding the capabilities of RISCA will be demonstrated by some example feedback networks. (Author)

AD-768 145/5GA PC$6.00/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
CONTRACTOR EVALUATION,
Richard J. Nolan, Jr. Jul 71, 79p Rept no. USAMC-ITC-2-71-07

Descriptors: (*Armed Forces procurement, Management planning), Contracts, Decision making, Bargaining, Mathematical models.
Identifiers: PERT, Contract administration.

The evaluation needs of the Army Materiel Command are investigated and the basic armed services procurement process is reviewed. The paper advocates the use of PERT to evaluate contractors and shows how it should be applied to the preaward survey, and to source selection. The PERT technique can be a powerful tool to evaluate a contractor's capability. PERT has been used successfully in the past to review and schedule a particular project once the project has been selected. The use here is to display the different contractors on PERT networks and to evaluate the differences displayed in the networks, before award. Advantages and disadvantages of this method are given and the method is endorsed when the need is to evaluate a contractor's capability, or among different proposals. There is one reservation to the method. It depends on whether the contractor really desires to meet the contract deadlines. (Author)

AD-768 187/7GA PC$8.75/MF$1.45
Texas A and M Univ College Station
AN EVALUATION OF A SPARING TECHNIQUE TO DETERMINE ITS APPLICABILITY FOR GENERAL USE.
Research rept.,
Ronald Dean Oglesby. Mar 72, 131p
Master's thesis.

Descriptors: (*Spare parts, Mathematical prediction), Probability density functions, Confidence limits, Analysis of Variance, Computer programs.
Identifiers: Computerized simulation, Weibull density functions, Normal density functions.

H.E. Lynch, R.S. Morris, Dr. R.J. McNichols, and Dr. D.R. Shreve have developed a prediction technique for the number of spares for a system, utilizing a prechosen probability level that sufficient spares would be available. The purpose of the paper is to test the technique. The testing of the prediction technique was done by using computer simulations. Basic systems were used with different probability density functions of time to failure used for the distribution of the processes in the systems. The same basic systems were used with the prediction technique to give results that could be compared. The results of this work showed that the prediction technique could be used in several cases to give estimates of the number of spares. In other cases the paper shows the variation between the prediction technique and the simulation. The use of the prediction technique depends upon the system and the probability density functions of time to failure. (Author)

AD-768 295/8GA PC$10.50/MF$1.45
Army Foreign Science and Technology Center Charlottesville Va
REAR SERVICES AND SUPPLY OF THE SOVIET ARMED FORCES. NUMBER 10, OCTOBER 1972.
16 Jul 73, 168p Rept no. FSTC-HT-23-48-74
Trans. of Tyl i Snabshenie Sovetskikh Vooruzhennykh Sil (USSR) v33 n10 Oct 73. See also report dated 6 Jul 73, AD-755 022.

Descriptors: (*Logistics, *USSR), Reviews, Armed Forces(Foreign), Military training, Military tactics, Infantry, Armed forces supplies, Armed forces transportation.
Identifiers: Translations.

Articles written by Soviet military personnel mostly deal with combat, political and specialist training; supply, economics, finance and troop life; and military communications and transport.

AD-768 329/3GA PC$10.25/1.45
Army Foreign Science and Technology Center Charlottesville Va
REAR AREA SERVICES AND SUPPLY. VOLUME 33, NUMBER 12, DECEMBER 1972.
6 Jul 73, 164p Rept no. FSTC-HT-23-254-74
Trans. of Tyl i Snabzhenie Sovetskikh Vooruzhennykh Sil (USSR) v33 n12 Dec 72.

Descriptors: (*Logistics, *USSR), Reviews, Military training, Infantry, Gunnery, Submarines, Ships, Armed forces supplies, Armed Forces transportation.
Identifiers: Translations.

Articles written by Soviet military personnel deal mostly with combat political and specialist training, ship and submarine support, military supplies and transport.

15G. Operations, Strategy, and Tactics

AD-767 731/3GA PC$3.00/MF$1.45
National Military Command System Support Center Washington D C
THE NMCSSC QUICK-REACTING GENERAL WAR GAMING SYSTEM (QUICK). ANALYTICAL MANUAL. VOLUME I. DATA INPUT SUBSYSTEM. CHANGE 1.
Computer systems manual.
25 Sep 73, 32p Rept no. NMCSSC-CSM-AM-9A-67-v1-1
Change 1 to report dated 21 Feb 72, AD-740 763.

Descriptors: (*War games, *Programming(Computers)), (*Nuclear warfare, Mathematical models), Data processing systems, Antimissile defense systems, Antiaircraft defense systems, Kill probabilities, Simulation, Instruction manuals.
Identifiers: QUICK(Quick Reacting General War Gaming System), Quick reacting general war gaming system, Computerized simulation.

The Quick-Reacting General War Gaming System (QUICK) is designed to assist in the study of strategic conflicts involving a large-scale exchange of nuclear weapons. The system is structured into four major subsystems: Data base Preparation, Plan Generation, Simulation, and Data Output subsystems. The report describes the data input subsystem which performs the function of accepting required input data and assembling a game data base which is suitable for input to the Plan Generation, Simulation, and Data Output subsystems.

AD-767 799/0GA PC$3.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
MATHEMATICS IN MILITARY OPERATIONAL RESEARCH.
Memorandum rept.,
Brian W. Conolly. 1 Sep 73, 77p Rept no. SACLANTCEN-SM-21

Descriptors: (*Naval operations, Operations research), Mathematical models, Antisubmarine warfare, Mine warfare, Decision theory, Stochastic processes, Geometry, Italy.

The report is divided into three main sections. In the first section a stochastic model is formulated to represent a brief campaign in which major naval units sojourn in a given area for the fulfilment of a certain mission, and are subjected to submarine attack by the enemy. The second section is also of stochastic nature and describes the use of probabilistic methods in an aspect of mine warfare. In the third section the problems considered are geometrical in nature. They are divided into three categories: Geometrical Probability; closure; and, location.

AD-768 162/0GA PC$3.00/MF$1.45
Computer Sciences Corp Fort Leavenworth Kans Combat Developments Research Office

IMPROVEMENT OF THE WAR-GAMING CAPABILITY, PHASE II (WAGCAP II).
Final rept.
Jun 73, 49p
Contract DAAG11-70-C-0875
See also AD-753 628 and Appendix B, Part 1, AD-768 166.

Descriptors: (*War games, Mathematical models), (*Army operations, *Programming(Computers)), Game theory, Mission profiles, Instruction manuals, Corrections, Sensitivity.
Identifiers: WAGCAP(War Gaming Capability), War gaming capability, DIVWAG computer program, Force structure, Computerized simulation, FORTRAN 4 programming language, FORTRAN.

The report, supported by Appendices A through D, describes the work performed and results achieved by Computer Sciences Corporations Combat Development Research Office as they supported the Division War Game (DIVWAG) Model in the areas of Model Maintenance, Technical Training of government personnel, Technical Support, and Sensitivity Testing. The volume contains the main report and Appendix A - Statement of Work. (Author)

AD-768 163/8GA PC$8.75/MF$1.45
Computer Sciences Corp Fort Leavenworth Kans Combat Developments Research Office
IMPROVEMENT OF THE WAR-GAMING CAPABILITY, PHASE II (WAGGAP II). APPENDIX B. SENSITIVITY TEST DESCRIPTIONS. PART II.
Final rept.
Jun 73, 441p
Contract DAAG11-70-C-0875
See also Appendix B, Part 1, AD-768 166 and Appendix C, AD-768 164.

Descriptors: (*War games, Mathematical models), (*Army operations, *programming(Computers)), Game theory, Mission profiles, Sensitivity, Close support, Tanks(Combat vehicles), Combat readiness, Kill probabilities, Military intelligence, Computer programs.
Identifiers: WAGCAP(War Gaming Capability), War gaming capability, DIVWAG computer program, Force structure, Computerized simulation, FORTRAN 4 programming language, FORTRAN.

The purpose of the sensitivity test was to study ground combat assessments as functions of initial velocity of attacking units and of variations in force ratios and to study the interrelationships of initial velocity and force ratios as they impact on battle results.

AD-768 164/6GA PC$9.75/MF$1.45
Computer Sciences Corp Fort Leavenworth Kans Combat Developments Research Office
IMPROVEMENT OF THE WAR-GAMING CAPABILITY, PHASE II (WAGCAP II). APPENDIX C. DIVWAG MODEL MAINTENANCE.
Final rept.
Jun 73, 513p
Contract DAAG11-70-C-0875
See also Appendix B, Part 2, AD-768 163 and Appendix D, AD-768 165.

Descriptors: (*War games, Mathematical models), (*Army operations, *Programming(Computers)), Game theory, Mission profiles, Sensitivity, Control sequences, Military intelligence, Airmobile operations, Instruction manuals, Corrections.
Identifiers: WAGCAP(War Gaming Capability), War gaming capability, DIVWAG computer program, Force structure, Computerized simulation, FORTRAN 4 programming language, CDC 3300 computers, CDC 6500 computers, FORTRAN.

The report describes the modifications applied to the Division War Game (DIVWAG) Model in both the Control Data Corporation (CDC 3300 and 6500 computer systems configurations. (Author)

AD-768 165/3GA PC$3.75/MF$1.45
Computer Sciences Corp Fort Leavenworth Kans Combat Developments Research Office
IMPROVEMENT OF THE WAR-GAMING CAPABILITY, PHASE II (WAGCAP II). APPENDIX D. WAGCAP II TECHNICAL TRAINING.
Final rept.
Jun 73, 97p
Contract DAAG11-70-C-0875
See also Appendix C, AD-768 164.

Descriptors: (*War games, Mathematical models), (*Army operations, *Programming(Computers)), Military training, Instruction manuals.
Identifiers: WAGCAP(War Gaming Capability), War gaming capability, DIVWAG computer program, Force structure, Computerized simulation, FORTRAN 4 programming language, FORTRAN.

The report describes the training on the technical aspects of the Division War Game (DIVWAG) Model which was provided to government personnel by Computer Sciences Corporation personnel in fulfillment of their contract requirements. (Author)

AD-768 166/1GA PC$9.75/MF$1.45
Computer Sciences Corp Fort Leavenworth Kans Combat Developments Research Office
IMPROVEMENT OF THE WAR-GAMING CAPABILITY, PHASE II (WAGCAP II). APPENDIX B. SENSITIVITY TEST DESCRIPTIONS. PART I.
Final rept.
Jun 73, 506p
Contract DAAG11-70-C-0875
See also AD-768 162 and Appendix B, Part 2, AD-768 163.

Descriptors: (*War games, Mathematical models), (*Army operations, *Programming(Computers)), Game theory, Mission profiles, Sensitivity, Airmobile operations, Combat readiness, Close support, Military intelligence, Combat surveillance, Countermeasures, Kill probabilities.
Identifiers: WAGCAP(War Gaming Capability), War gaming capability, DIVWAG computer program, Force structure, Computerized simulation, FORTRAN 4 programming language, FORTRAN.

The report describes the sensitivity tests conducted on the Division War Game (DIVWAG) Model by Computer Sciences Corporation, personnel in support of model development and validation efforts. (Author)

AD-768 167/9GA PC$3.50/MF$1.45
Computer Sciences Corp Fort Leavenworth Kans Combat Developments Research Office
REPROGRAMMING OF THE DIVISION WAR GAME MODEL (DIVWAG).
Final rept.
Apr 73, 64p
Contract DAAG11-70-C-0875

Descriptors: (*War games, *Programming(Computers)), Mathematical models, Data processing systems, Compilers, Instruction manuals.
Identifiers: FORTRAN, CDC 6500 computers, DIVWAG computer programs.

The report describes the work performed in the redesigning and reprogramming effort to enable the Division War Game (DIVWAG) Model to execute properly on the Control Data Corporation Model 6500 computer system. (Author)

AD-768 183/6GA PC$6.50/MF$1.45
Texas A and M Univ College Station
A METHOD FOR THE DETERMINATION OF THE OPTIMUM MAINTENANCE FLOAT FOR SMALL FLEET SIZES.
Research rept.,
Todd E. Stevenson. May 72, 87p
Master's thesis.

Descriptors: (*Naval operations, *Logistics), Maintenance, Spare parts, Material control, Combat readiness, Queuing theory, Mathematical models, Computer programs.

The report develops a technique for finding the optimum maintenance float to support a fleet of units in the field. The technique is based on the steady state probabilities derived from a closed loop queuing model. A full force confidence level is found, for each float size, which expresses the percent of the time that the fleet will be at its full force size in the field. Inputs required for using the method are the function of the repair rate versus the service facility population, and the function of the per unit failure rate versus the number of units in the field. Computer programs and example problems illustrate the proposed method. (Author)

AD-768 213/1GA PC$6.50/MF$1.45
National Water Lift Co Kalamazoo Mich
FEASIBILITY ANALYSIS AND EVALUATION STUDY OF A REMOTELY CONTROLLED VEHICLE.
Final rept.,
James N. Tootle. 22 May 73, 296p Rept no. NWL-R-1659
Contract DAAE07-73-C-0071

Descriptors: (*Vehicles, *Antitank guns), Remote control systems, Feasibility studies, Mobility, Maneuverability, Transmissions, Internal combustion engines, Radio communication systems, Pulse communication systems, Guided missiles(Surface-to-surface), Optical sights.
Identifiers: Evaluation, Tank destroyers, XFGM-77A missiles, FGM-77A missiles.

The report documents the feasibility studies completed on a remotely controlled vehicle conceived for an antitank search-and-destroy mission. A four-wheel drive vehicle of 64.8 inch wheelbase and 62-inch overall width, with 29-inch tires, was found necessary for the required mobility. A 25-hp gasoline engine combined with hydrostatic transmissions provided a very maneuverable prime mover. A 10-channel 1-watt UHF-FM transmitter modulated by a digital pulse control system, comprised the communication link. A head-aimed TV with a foveal/peripheral format system was required to control a TV/armmament platform. Two TV cameras and three lenses were selected to provide information to a 10-watt video system. The TV-armament platform could mount either two DRAGON or two TOW missiles and their associated trackers for the destroy requirements of the mission. (Author)

JPRS-60145/GA PC$6.50/MF$1.45
Joint Publications Research Service, Arlington, Va.
CONCEPT, ALGORITHM, DECISION,
V. V. Druzhinin, and D. S. Kontorov. 28 Sep 73, 297p
Trans. of mono. Ideya, Alogritm, Reshenie, Moscow, 1972 326p.

Descriptors: (*Military operations, *Algorithms), (*Decision making, Algorithms), Mathematics, Linguistics, Military strategy, Tactical warfare, Languages, Computer systems hardware, Translations, Data processing, USSR.

The report contains an explanation of how mathematics, linguistics, and other ancient classical sciences in cooperation with new sciences and modern technology can help man better control social processes including the preparation and conduct of military operations.

16. MISSILE TECHNOLOGY

16B. Missile Trajectories

AD-767 941/8GA PC$3.00MF$1.45
Foreign Technology Div., Wright-Patterson AFB, Ohio.
EXPERIMENTAL INVESTIGATION OF THE MAGNUS EFFECT ON A GREATLY ELONGATED FINNED ROTATING BODY AT M = 4,
N. M. Bychkov, B. L. Dubrovskii, and V. M. Kovalenko. 18 Sep 73, 13p FTD-HT-23-32-74
Edited trans. of Akademiya Nauk SSSR. Sibirskoe Otdelenie. Izvestiya, n13, p24-28 1972, by Charles T. Ostertag, Jr.

Descriptors: (*Guided missile trajectories, *Magnus force), Angle of attack, Aerodynamic loading, Fins, Wind tunnel models, Supersonic characteristics, USSR.
Identifiers: Translations.

During the flight of a rotating missile or rocket under an angle of attack aerodynamic forces develop which are directed normal to the plane of the angle of attack, i.e., the so-called Magnus effect is displayed. The presence of lateral forces leads to the deviation of the missile from the assigned direction. For the calculation of flight trajectory it is necessary to know the magnitude of Magnus force and the point of its application. The report presents experimental data relative to the Magnus effect.

N73-29964/6GA PC$11.75/MF$1.45
Lockheed Missiles and Space Co., Palo Alto, Calif. Research Lab.
MODIFIED FUSED SILICIDE COATINGS FOR TANTALUM (TA-10W) REENTRY HEAT SHIELDS.
Final technical Report, 16 Jun. 1970 - 15 Apr. 1973.
C. M. Packer, and R. A. Perkins. 15 Apr 73, 195p
NASA-CR-120877, D316824
Contract NAS3-14316

Descriptors: *Heat shielding, *Protective coatings, *Reentry vehicles, *Silicides, *Tantalum alloys, Atmospheric entry, Oxidation, Slurries, Thermal protection.

For abstract, see STAR 1120

16D. Missiles

AD-767 686/9GA PC$7.25/MF$1.45
Naval Postgraduate School Monterey Calif
PROJECT MANAGEMENT AS RELATED TO WEAPON DEVELOPMENT IN NAVY RESEARCH AND DEVELOPMENT ORGANIZATIONS.
Master's thesis,
William Scott Munro, and Anthony Charles Brennan. Jun 73, 104p

Descriptors: (*Guided missiles(Air-to-air), *Research program administration), (*Naval research, Management control systems), Management planning, Naval research laboratories, Weapon systems, Logistics, Management engineering, Costs, Department of Defense, Theses.
Identifiers: *Logistics management, AGILE missiles.

The study investigates the role of Navy laboratories in the systems acquisition process. In particular, it looks at an attempt to expand the laboratories' traditional role of technical management of hardware projects in advanced and engineering development phases. The AGILE air-to-air missile development, the basis for this study, presents an opportunity to test the feasibility of decentralized management of defense procurement in actual practice. In evaluating the effectiveness of Navy management of the acquisition process it is recognized that more than one criteria may be relevant. The evaluation is based on two standards of measurement: compliance with Department of Defense policy and conformance to generally accepted principles of management. AGILE a current development program, is traced from inception to the present and unique management problems are discussed. The authors conclude that unless a total commitment to decentralized management is made the present management structure should be retained. (Author)

AD-768 009/3GA PC$2.75/MF$1.45
Army Test and Evaluation Command Aberdeen Proving Ground Md
TROPIC ENVIRONMENTAL TEST OF MISSILE AND ROCKET SYSTEMS.
Final rept. on test operations procedure.
3 Apr 73, 17p Rept no. TOP-5-1-032

Descriptors: (*Rockets, Tropical tests), (*Guided missiles, Tropical tests), Maintenance, Storage, Handling, Firing tests(Ordnance), Test methods.
Identifiers: *Common engineering test procedures.

The report provides background information relative to test and evaluation of missile and rocket systems. It identifies supporting tests, facilities and equipment required. It discusses conduct of test, test data, and analysis procedures. It is applicable to storage and field test in wet-warm and wet-hot climatic categories, and excludes simulated environments. (Modified author abstract)

AD-768 302/2GA PC$2.75/MF$1.45
Naval Ordnance Lab White Oak Md
AXISYMMETRIC ELLIPSOIDS IN IDEAL FLUIDS,
Charles W. Smith, and John R. Guala, Jr. 1 Aug 73, 21p Rept no. NOLTR-73-155

Descriptors: (*Guided missiles, *Water entry), Ellipsoids, Slender bodies, Hydrodynamics, Equations of motion, Pressure.

The report, the pressure acting on an axisymmetric ellipsoid in general motion is obtained. The forces and moments on the ellipsoid are then calculated. The behavior of the pressure, forces, and moments is then examined as the ellipsoid becomes slender. (Author)

AD-768 353/5GA PC$4.25/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
THE SIMULATION AND ANALYSIS OF A NEW FIRE CONTROL TECHNIQUE FOR LAUNCHING AIR-TO-AIR MISSILES.
Master's thesis,
Lee Duane Puckett, and Cecil David Haas. Jun 73, 121p Rept no. GGC/EE/73-4

Descriptors: (*Guided missiles(Air-to-air), *Aircraft fire control systems), Fire control computers, Guided missile trajectories, Aerial warfare, Pursuit courses, Mathematical models, Computer programs, Theses, Simulation.

Under controlled conditions the air-to-air missile has proven to be an effective weapon. However, this situation changes in the area of hard maneuvering combat where the missile system must perform under more taxing conditions. Techniques to remedy the deficiencies found in current systems range from hardware improvements to computerized methods for predicting missile firing opportunities. The study considers a fire control technique which predicts and displays a missile's maximum off-boresight capability and, in addition, allows the seeker to acquire non-boresight targets. The fire control computer considers such factors as the target's acceleration and range and the missile's performance. The philosophy of this approach is to reduce both the hardware and on-line computational requirements while incorporating pilot judgment as part of the solution to the fire control problem. (Modified author abstract)

SC-DR-720656/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
SUPERCAVITATING DRAG OF UNDERWATER MODELS.
A. E. Stephenson. May 73, 13p

Descriptors: (*Missiles, Drag), (*Drag, *Underwater), Cavitation, Shape, Transport.

For abstract, see NSA 28 04, number 10613.

SLA-73-5271/GA PC$3.50/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
AIRVAL; DOD PROGRAM TO EVALUATE AIR-TO-AIR MISSILE EFFECTIVENESS.
T. E. Latta. Mar 73, 30p CONF-730428-1

Descriptors: (*Missiles, *Efficiency), Aircraft, Electronic guidance, Performance, Targets.

For abstract, see NSA 28 05, number 12583.

17. NAVIGATION, DETECTION, COMMUNICATIONS, AND COUNTERMEASURES

17A. Acoustic Detection

AD-767 814/7GA PC$2.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
RECENT DEVELOPMENTS IN PARAMETRIC SONAR.
Memo.,
Robert H. Mellen. 15 Sep 73, 20p Rept no. SACLANTCEN-SM-23

Descriptors: (*Sonar arrays, Design), Mathematical models, Numerical analysis, Integration, Italy.
Identifiers: Instrument characteristics.

The theory of the parametric end-fire transmitting array is outlined and the performance characteristics of several experimental sources are described. The status of parametric receiving development is also briefly discussed. (Author)

AD-767 938/4GA PC$4.75/MF$1.45
Naval Air Development Center Warminster Pa Aero-Electronic Technology Dept
AN INTRODUCTION TO ADAPTIVE BEAMFORMING.
Phase rept.,
W. Norr. 27 Jun 73, 53p Rept no. NADC-73056-20

Descriptors: (*Information theory, *Sonar arrays), Analysis of variance, Correlation techniques, Power spectra, Noise, Algorithms, Matrix algebra, Hydrophones.
Identifiers: Beam forming, Signal processing, *Adaptive beamforming, Matrix inversion.

The purpose of the report is to describe and compare the various algorithms used in ABF (Adaptive Beamforming). It was written primarily to disseminate information among those who will require a working knowledge of ABF. Various techniques of matrix inversion, gradient search, and eigenvalue decomposition of the cross-spectral matrix are discussed. An introduction to beamforming is given in matrix notation, and performance criteria are stated and compared. Although the detailed derivations for the algorithms are omitted, the block diagrams, assumptions, limitations, conclusions, and all available information are given. (Author)

AD-767 974/9GA PC$2.75/MF$1.45
Texas Univ Austin Applied Research Labs
OPERATING INSTRUCTIONS FOR THE PORTABLE SYNCED TRACKING PINGER AND THE STP POWER PACK,
Dennis W. Feller. 26 Jul 73, 10p Rept no. ARL-TM-73-18
Contract N60921-73-C-0107

Descriptors: (*Sonar projectors, Instruction manuals), Portable, Underwater sound equipment, Underwater tracking, Battery chargers, Power supplies.
Identifiers: Pingers, CAPTOR project.

The report contains operating instructions for the PSTP (portable synced tracking pinger) and the STP power pack. Both the PSTP and the STP power pack are parts of the NTC acoustic tracking system. (Author)

AD-767 975/6GA PC$2.75/MF$1.45
Texas Univ Austin Applied Research Labs
NTC (NAVIGATION, TRACKING, AND COMMUNICATION) CONTROL PANEL OPERATION INSTRUCTIONS,
Dennis W. Feller. 26 Jul 73, 13p Rept no. ARL-TM-73-20
Contract N60921-73-C-0107
Report on project CAPTOR.

Descriptors: (*Underwater sound equipment, *Control panels), Underwater navigation, Underwater tracking, Underwater communication systems, Instruction manuals.
Identifiers: CAPTOR project.

The report contains operating instructions for the NTC Control Panel. The NTC Control Panel is the shore termination of a coaxial cable which connects the sea and shore electronics of the NTC (Navigation, Tracking and Communication) acoustic ranging system at Ft. Lauderdale, Florida. (Author)

AD-767 976/4GA PC$2.75/MF$1.45
Texas Univ Austin Applied Research Labs
RANGE AND DELAY PROCESSOR OPERATION INSTRUCTIONS,
Dennis W. Feller. 26 Jul 73, 13p Rept no. ARL-TM-73-21
Contract N60921-73-C-0107

Descriptors: (*Underwater tracking, Acoustic detectors), Range finding, Data processing systems, Instruction manuals.
Identifiers: FIEND computer.

The report contains operating instructions for the range and delay processor. The processor is part of the NTC acoustic tracking subsystem at Fort Lauderdale, Florida. Included in this report are pictures of the processor, time channel designation, operation of control switches, and an explanation of the outputs of the processor. (Author)

AD-768 285/9GA PC$3.50/MF$1.45
Woods Hole Oceanographic Institution Mass
CONSTRUCTION AND PERFORMANCE OF THE CERAMIC CYLINDER ARRAY IN USE FOR SEISMIC PROFILING AT WOODS HOLE - 1968-1973.
Technical rept.,
S. T. Knott. Sep 73, 52p Rept no. WHOI-73-64
Contract N00014-66-C-0241

Descriptors: (*Sonar arrays, Design), Hydrophones, Ceramic materials, Construction, Mechanical drawings, Wiring diagrams, Performance(Engineering), Oceanographic equipment.
Identifiers: *Hydrophone arrays, Seismic profiles.

The report describes the construction and performance of the ceramic-cylinder hydrophone array. The array is a linear single-channel unit, 2.5 cm (1 in) in diameter, made up of 7.6-m (25-ft) vibration damping, hydrophone, and tail sections. Fifty transducers are spaced approximately 15 cm (6 in) on center in each hydrophone section. (Modified author abstract)

PATENT-3 706 967/GA Not available NTIS
Department of the Navy Washington D C
UNDERWATER ACOUSTIC PROJECTOR.
Patent,
Nicholas Renna, Jr. Filed 21 Jan 71, patented 19 Dec 72, 6p Rept nos. PAT-APPL-108 488,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Sonar projectors, *Patents), Underwater sound generators, Broadband.
Identifiers: PAT-CL-340-10.

The patent describes a high efficiency, broadband acoustic projector for deep water applications in excess of twelve thousand feet. The projector comprises an active element consisting of a plurality of piezoelectric staves electrically connected in series. The staves are physically arranged in a cylindrical assembly prestressed in a fibrous glass wrapping, and installed in an annular, acoustically transparent, neoprene boot. Air-exhausted oil fills the boot to completely immerse the active element and thereby couple the radiated energy thereof to the surrounding water. The center cavity of the projector is open at both ends for free-flooding. Broadband response is achieved by close-coupling the active element's cavity and hoop resonances whereby they reinforce each other across a broad range of operating frequencies.

17B. Communication

AD-767 758/6GA PC$11.25/MF$1.45
University of Southern California Los Angeles Electronic Sciences Lab
SLANT TRANSFORM IMAGE CODING.
Technical rept.,
Wen-Hsiung Chen. May 73, 181p Rept no. USCEE-441
Contract F08606-72-C-0008, ARPA Order-1706

Descriptors: (*Color television, Integral transforms), (*Coding, Images), Bandwidth, Statistical analysis, Matrix algebra, Stochastic processes, Probability density functions, Pictures, Computer programs, Theses.
Identifiers: *Image processing, *Slant transformation, Fourier transformation, Hadamard transformation, Haar transformation, Karhunen-Loeve transformation, Quantization, Monochrome images.

A slant transform matrix consisting of basis vectors which resemble typical lines of an image has been developed. A fast transform algorithm based on the matrix decomposition has also been presented. The transform has been proven to be superior, from the standpoint of image quality, to other transforms possessing fast computational algorithms. The statistical properties of the slant transform have been analyzed by introducing probability density and covariance models for the transform samples. The bandwidth reduction capability of the slant transform has been investigated by several test images. Two methods of achieving bandwidth reduction have been presented, namely, threshold and zonal coding. Studies have indicated that the average coding of a monochrome image can be reduced from 8 bits/pixel to 1 bit/pixel or 1.5 bits/pixel for the threshold and zonal coding, respectively, without seriously degrading the image quality. Studies have also indicated that zonal coding has an extremely high noise immunity, and can be practically implemented. The average coding of a color image can be reduced from 24 bits/pixel to 2 bits/pixel by zonal coding while preserving good quality reconstruction. (Author)

AD-767 929/3GA PC$2.75/MF$1.45
Naval Electronics Lab Center San Diego Calif
A METHOD OF DETECTING SIGNIFICANT SOURCES OF INTERMODULATION INTERFERENCE.
Research and development rept. 12 Jul-20 Aug 73,
W. M. Chase, J. W. Rockway, and G. C. Salisbury. 20 Aug 73, 12p Rept no. NELC-TR-1883

Descriptors: (*Radiofrequency interference, Radio signals), Communication equipment, Detection, Modulation, Electromagnetic compatibility, Test methods.
Identifiers: *Intermodulation.

An accurate knowledge of lowest orders is shown to be important for locating significant sources of intermodulation interference signals. A practical, reliable method is presented for calculating the lowest order occurring on the frequency of any intermodulation signal observed to be strong enough to threaten low-error-rate reception. A hypothetical example involving two local transmit frequencies is described. The method is found to represent a major extension in applicability and ease of use over previous calculations, which were awkward and unsatisfactory for field use. (Author)

AD-768 072/1GA PC$5.00/MF$1.45
IIT Research Inst Chicago Ill
INTERFERENCE MITIGATION STUDIES FOR TEXAS TELEPHONE AND POWER DISTRIBUTION SYSTEMS.
Technical studies,
James D. Huber, and Michael F. Genge. Jul 73, 59p Rept no. IITRI-E6249-1
Contract N00039-73-C-0030

Descriptors: (*Telephone communication systems, Radiofrequency interference), (*Transmission lines, *Radiofrequency interference), Extremely low frequency, Inhibition, Costs, Underground antennas, Computer programs, Texas, Electric cables, Telephone lines.
Identifiers: Sanguine project.

The document demonstrates the effects of various parameters associated with a Sanguine System on the interference mitigation of Texas Telephone and Power Distribution Systems. Cost models are presented, which were developed from this parametric study, for the mitigation of interference to these utilities. (Author)

AD-768 182/6GA PC$3.50/MF$1.45
Rand Corp Santa Monica Calif
A SPEECH UNDERSTANDING SYSTEM: AN EXAMPLE OF RAND RESEARCH,
A. S. Hoffman. Apr 73, 29p Rept no. P-5002

Descriptors: (*Artificial intelligence, *Speech recognition), (*Communication systems, *Computers), Reviews, Organizations, Research program administration, Management engineering.
Identifiers: Man computer communication.

A computer speech understanding program is used as an illustrative example of a typical program at Rand. The various elements of a complete speech processing procedure are illustrated. Processing of the electrical signal corresponds to the temporal variation of the pressure or acoustic waveform. There has to be a model of the language, with the rules and their variations specified, and a model of the user and an indication of what constraints he puts on the system. Semantic processing of these various elements allows the computer to interpret or understand what has been said.

AD-768 205/7GA PC$4.50/MF$1.45
Stanford Research Inst Menlo Park Calif
VHF PROPAGATION RESULTS USING LOW ANTENNA HEIGHTS IN TROPICAL FORESTS.
Special technical rept. no. 46,
G. H. Hagn, N. K. Shrauger, and R. A. Sheperd. Mar 73, 128p ECOM-0220-46-70
Contract DAAB07-70-C-0220, ARPA Order-371

Descriptors: (*Radio transmission, Tropical tests), Very high frequency, Polarization, Portable, Jungles, Radio equipment, Antennas, Terrain, Southeast Asia.
Identifiers: SEACORE project.

Characteristics of VHF propagation in tropical terrain were studied using various simple, low, receiving antennas and a manpack radio trans-

mitter termed Xeledrop (Transmitting (X) Elementary Dipole with Optional Polarization). Measurements of received voltage were made at 50, 75, and 100 MHz, using both horizontal and vertical polarization while the Xeledop was carried down trails in clearings and tropical forests. Data are also given for cases of cross-polarization. The measurements of received signal covered in this report (and other manpack Xeledop measurements previously reported) are converted to radio system loss. Conversion from received voltage to system loss for a system using half-wave dipoles is also possible through relationships derived here, and an approximate formula is given for conversion to basic transmission loss. The use of horizontal polarization produces a much lower system loss than does the use of vertical polarization in the forest for the cases studied, with the exception of very low antanna heights. Tests made with a balloon-borne Xeledop elevated several hundred feet indicated the operational superiority of vertical dipoles over horizontal dipoles for balloon-elevated relays used in jungle terrain. The system loss for vertical polarization exceeded that obtained with horizontal polarization and optimum geometry, but optimum geometry for horizontal polarization was difficult to maintain. (Author)

AD-768 217/2GA PC$3.75/MF$1.45
Ail Deer Park N Y
ELECTRONICALLY TUNED LINEAR VHF PRESELECTOR.
Final rept. Nov 71-Jul 73,
E. Markard. Oct 73, 97p* Rept no. AIL-7775-F ECOM-0068-F-72
Contract DAAB07-72-C-0068

Descriptors: (*Tuning devices, Transmitter-receivers), Very high frequency, Digital systems, Ferrites, Diodes(Semiconductor), Resonators, Radio equipment.
Identifiers: *Preselectors.

An investigation was made of digitally controlled tuning elements applicable to small, low-loss VHF preselectors. It summarizes the evaluation of ferrites and solid-state devices (primarily PIN diodes) for this application, and describes the performance of a digitally tunable, two resonator prototype filter incorporating PIN diode tuners. The prototype clearly demonstrated the feasibility of digitally tuned preselectors and indicated the following potential capabilities: High-speed digital tuning across the entire 30 to 80 MHz frequency range without the need for band-switching; Insertion loss on the order of 2 dB; Inherent frequency stability; Low average bias power requirement approximately 63 mW; RF power operation to at least 10 watts with second harmonic 80 dB below the fundamental; and Small size and lightweight, 8 cubic inches and 7 ounces, respectively. (Author)

AD-768 328/4GA PC$7.25/MF$1.45
IIT Research Inst Chicago Ill
STUDY OF CONCEPTS FOR NAVY TACTICAL VOICE RADIO COMMUNICATIONS.
Final rept.,
Robert V. Janc, Barry I. Marks, and Nickolas T. Thomopulos. Oct 73, 332p Rept no. IITRI-E6174-42
Contract N00014-70-C-0375

Descriptors: (*Radio communication systems, Voice communication systems), Networks, Probability, Statistical analysis, Performance(Engineering), Naval operations, Tactical warfare.
Identifiers: Switching theory.

Various reports have indicated that changes are needed in the existing Naval tactical voice radio networks to improve current performance and to provide future operational requirements. The existing networks are of the dedicated type and the network supervisory control functions are carried out by voice transmission. It is in these two areas that changes are being considered; specificially, switched networks to replace the dedicated ones and electronic hardware to perform the network supervisory control functions. The basic objective of this program was to develop an analytical methodology that could be used to quantitatively predict the performance of the tactical voice radio networks for a range of alternatives that encompass the areas of switched networks and electronic control. This report describes the program in four levels of detail; namely, a brief executive summary, a broad nonmathematical overview, a more detailed narrative with mathematical summaries and a complete mathematical documentation of the results produced. (Author)

COM-73-11493/6GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Space Environment Lab.
A RECEIVER DESIGN FOR THE ATS-F RADIO BEACON EXPERIMENT,
R. N. Grubb. 1972, 16p NOAA-73080940
Pub. in Proceedings of the Symposium on the Future Application of Satellite Beacon Measurements, Jun 72 p115-128.

Descriptors: (*Radio receivers, Design), Scientific satellites, Radio beacons, Faraday effect.
Identifiers: ATS-F satellite.

The paper describes the receiving system now in an advanced stage of construction. The basic design of the overall receiving system is determined by the received power density from the satellite and the desired compromise between ground antenna aperture, system response times and measurement signal-to-noise ratio. Information is given on the measurement of Faraday rotation, the measurement of modulation phase, and system calibration. A simplified overall block disgram of the system for making all the desired measurements is shown.

COM-73-11587/5GA PC$3.50/MF$1.45
Office of Telecommunications, Boulder, Colo. Inst. for Telecommunication Sciences.
A SURVEY OF TECHNICAL REQUIREMENTS FOR BROADBAND CABLE TELESERVICES. VOLUME 1. A SUMMARY OF TECHNICAL PROBLEMS ASSOCIATED WITH BROADBAND CABLE TELESERVICES DEVELOPMENT,
P. M. McManamon, and W. F. Utlaut. Jul 73, 67p* OTR-73-13-Vol-1
See also Volume 2, COM-73-11588.

Descriptors: (*Closed circuit television, Communications management), Industries, Reviews, Systems engineering, Standards, Interfaces, Central processing units, Contracted services, Broadband, Television equipment, Television transmission, Control equipment, Telecommunication.
Identifiers: *Cable television, CATV(Community antenna Televsion).

The report summarizes the results of a survey of the CATV industry and related technological industries. The following six reports (OTR 73-13, Volumes 2 to 7) deal with the survey results in detail. The survey identifies some of the important technical factors which need to be considered in order that a transition from the technical state of today's cable television and services to new teleservices may be brought about. The relationship between systems and teleservices is explored. Technical summaries are presented in the areas of measurements, standards or engineering practices, new applications of technology, system design analysis, software, and teleservices. (Author)

COM-73-11588/3GA PC$3.75/MF$1.45
Office of Telecommunications, Boulder, Colo. Inst. for Telecommunication Sciences.
A SURVEY OF TECHNICAL REQUIREMENTS FOR BROADBAND CABLE TELESERVICES. VOLUME 2. SUBSCRBER TERMINALS AND NETWORK INTERFACE,
Bernard Wieder, Richard H. Espeland, and Charles J. Chilton. Jul 73, 89p OTR-73-13-Vol-2
See also Volume 1, COM-73-11587, and Volume 4, COM-73-11589.

Descriptors: (*Closed circuit television, Communications management), Contracted services, Television equipment, Interfaces, Broadband, Reviews, Converters.
Identifiers: *Cable television, CATV(Community Antenna Television).

The report examines the question of home terminals in the cable environment. The functions of subscriber-owned television receivers in this new environment is examined in detail. Characteristics of set-top converters are also examined in detail from the same point of view. Augmented one-way services and two-way services will add equipment in the home that can contain among others, a camera, microphones, digital devices, sensors, printers, and tape recorders. Characteristics of the augmented home terminal are examined in an attempt to identify the demands the new services may place on the cable systems. (Author)

COM-73-11589/1GA PC$4.75/MF$1.45
Office of Telecommunications, Boulder Colo. Inst. for Telecommunication Sciences.
A SURVEY OF TECHNICAL REQUIREMENTS FOR BROADBAND CABLE TELESERVICES. VOLUME 4. SYSTEM CONTROL FACILITIES: HEAD-ENDS AND CENTRAL PROCESSORS,
Ernest K. Smith, Rayner K. Rosich, Edgar C. Hayden, and Laurence L. Melanson. Jul 73, 154p OTR-73-13-Vol-4
See also Volume 2, COM-73-11588 and Volume 5, COM-73-11590.

Descriptors: (*Closed circuit television, Communications management), Television equipment, Control equipment, Central processing units, Contracted services, Broadband, Reviews, Performance standards.
Identifiers: *Cable television, CATV(Community Antenna Television).

The report is concerned with the system control facilities in broadband communication systems. In CATV systems these are the head-ends and central processors. Technical problems and needs are summarized in Section one immediately following. Section two offers a cursory overview of systems and mention of processors is made only incidentally. In Section three the question of the computer needs laid upon the central processor at head-ends or subhead-ends by particular service requirements is looked at, and in Section four the problems of coupling the computer into a communications system are considered. Privacy and security, a worrisome area in time-shared computers to say nothing of CATV systems, is considered in Section five while performance standards, present and future, are treated in Section six. In Section seven we look at measurements required by current FCC regulations, those which the cable operator will want to make anyway, and those which future needs would appear to require. Finally a set of appendices treat such areas as the characteristics of television signals and existing standards. (Author)

COM-73-11590/9GA PC$4.50/MF$1.45
Office of Telecommunications, Boulder, Colo. Inst. for Telecommunication Sciences.
A SURVEY OF TECHNICAL REQUIREMENTS FOR BROADBAND CABLE TELESERVICES. VOLUME 5. SYSTEM INTERCONNECTIONS,
Peter M. McManamon. Jul 73, 134p OTR-73-13-Vol-5
See also Volume 4, COM-73-11589, and Volume 6, COM-73-11591.

Descriptors: (*Closed circuit television, Communications management), Broadband, Interactions, Systems engineering, Contracted services, Data transmission, Digital techniques, Telecommunication, Interfaces, Television transmission, Common carriers, Reviews.
Identifiers: *Cable television, CATV(Community Antenna Television).

The interconnection of existing and future CATV systems for two-way transfer of audio/ video and digital data signals was surveyed. The concept of interconnection is explored relative to existing and proposed CATV systems and broadband teleservice networks, common carrier services, facilities and growth projections, and the technical-economic state-of-the-art of the required technology. The need for interconnection is reviewed. Satellite and line-of-sight microwave transmission in addition to digital versus analog transmission systems aspects are considered in terms of interconnection. Some potentially significant queuing problems are identified. (Author)

COM-73-11591/7GA PC$3.00/MF$1.45
Office of Telecommunications, Boulder, Colo. Inst. for Telecommunication Sciences.
A SURVEY OF TECHNICAL REQUIREMENTS FOR BROADBAND CABLE TELESERVICES. VOLUME 6. THE USE OF COMPUTERS IN CATV TWO-WAY COMMUNICATIONS SYSTEM,
Larry J. Campbell. Jul 73, 39p OTR-73-13-Vol-6
See also Volume 5, COM-73-11590, and Volume 7, COM-73-11592.

Descriptors: (*Closed circuit television, Communications management), Computers, Design, Decision making, Mathematical models, Automation, Broadband, Contracted services, Reviews.
Identifiers: *Cable television, CATV(Community Antenna Television), Computer aided design.

Uses of the computer in the design and operation of broadband communication systems are discussed. The current status of computer aided design is reviewed, with consideration ranging from components to total systems and networks. Future applications of computers to design, simulation, operation, maintenance, and economic modeling and decision making are introduced and assessed. Lastly, recommendations are made for necessary future research and development. (Author)

COM-73-11592/5GA PC$4.50/MF$1.45
Office of Telecommunications, Boulder, Colo. Inst. for Telecommunication Sciences.
A SURVEY OF TECHNICAL REQUIREMENTS FOR BROADBAND CABLE TELESERVICES. VOLUME 7. A SELECTED BIBLIOGRAPHY,
N. Holmberg, E. Gray, and P. McManamon. Jul 73, 142p OTR-73-13-Vol-7
See also Volume 6, COM-73-11591.

Descriptors: (*Closed circuit television, Communications management), Bibliographies, Broadband, Contracted services, Systems engineering, Television equipment, Telecommunication, Standards, Television transmission.
Identifiers: *Cable television, CATV(Community Antenna Television).

The report presents a selected bibliography of publications concerned with cable television or Community Antenna Television (CATV) and broadband cable systems which offer or have been proposed to offer various services (teleservices) in addition to one-way distribution of present television channels. The bibliography includes publications related to technical teleservices, system management, system economics, and legal, social, privacy and security aspects of the systems. (Author)

COM-73-11656/8GA PC$5.75/MF$1.45
Office of Telecommunications, Boulder, Colo. Inst. for Telecommunication Sciences.
A SURVEY OF TECHNICAL REQUIREMENTS FOR BROADBAND CABLE TELESERVICES. VOLUME 3. SIGNAL TRANSMISSION AND DELIVERY BETWEEN HEAD-END AND SUBSCRIBER TERMINALS,
Russell B. Chadwick, Richard A. Chandler, Robert L. Gallawa, and Lockett E. Wood. Jul 73, 226p OTR-73-13-Vol-3
See also Volume 2, COM-73-11588, and Volume 4, COM-73-11589.

Descriptors: (*Closed circuit television, Communications management), Television transmission, Television equipment, Amplifiers, Communication cables, Pulse transmission, Performance standards, Fiber optics. Microwave communication, Telecommunication, Broadband, Contracted services, Reviews.
Identifiers: *Cable television, CATV(Community Antenna Television).

The report is concerned with the delivery of broadband information between the system head-end and the individual subscriber terminals. Recommendations pertaining to the need for research in specified areas are given. A review of the system hardware is provided, including discussion of device noise and distortion characteristics. Treatment is given to various types of trunking systems, including two-way configurations. A discussion of the applications of advanced communications techniques is provided, covering digital transmission, multiple-access systems, and signal transmission via optical waveguides. Finally, a review and listing of standards and tests for the delivery system are given, including FCC and NCTA standards. (Author)

N73-29091/8GA PC$5.50/MF$1.45
Signals Research and Development Establishment, Christchurch (England).
A GUNN EFFECT LOCAL OSCILLATOR DESIGNED FOR A MILITARY RADIO RELAY SET.
A. H. Johnson. Aug 72, 70p SRDE-72028, BR34196

Descriptors: *Gunn diodes, *Gunn effect, *Microwave oscillators, *Radio relay systems, Electronic modules, Equipment specifications, Radio frequencies, Systems analysis.

For abstract, see STAR 1120

N73-29098/3GA PC$14.50/MF$1.45
Stanford Univ., Calif.
TELECONFERENCING IN WISCONSIN.
R. G. Lawson. Oct 71, 247p NASA-CR-133591
Contract NGR-05-020-517

Descriptors: *Communication satellites, *Conferences, *Radio communication, *Telecommunication, Data transmission, Prediction analysis techniques, Systems analysis.

For abstract, see STAR 1120

N73-29099/1GA PC$13.00/MF$1.45
Stanford Univ., Calif.
LEGAL ASPECTS OF SATELLITE TELECONFERENCING.
D. D. Smith. Oct 71, 219p NASA-CR-133592
Contract NGR-05-020-517

Descriptors: *Communication satellites, *Conferences, *Legal liability, *Radio relay systems, *Telecommunication, Management planning, Project management, Systems engineering.

For abstract, see STAR 1120

N73-29100/7GA PC$19.00/MF$1.45
Stanford Univ., Calif. Radioscience Lab.
TELECONFERENCING: COST OPTIMIZATION OF SATELLITE AND GROUND SYSTEMS FOR CONTINUING PROGRESSIONAL EDUCATION AND MEDICAL SERVICES.
D. Dunn, and B. Lusignan. May 72, 339p NASA-CR-133359
Contract NGR-05-020-541

Descriptors: *Communication satellites, *Data transmission, *Radio communication, *Radio relay systems, *Telecommunication, Cost analysis, Prediction analysis techniques, Systems analysis.

For abstract, see STAR 1120

N73-29103/1GA PC$3.00/MF$1.45
Japan Broadcasting Corp., Tokyo. New Broadcasting System Research Group.
GRAPHIC TRANSMISSION IN FM SOUND BROADCASTING.
H. Ando, and T. Kaneki. Mar 73, 10p NHK-LABS-NOTE-160

Descriptors: *Data transmission, *Television systems, Cathode ray tubes, Display devices, Frequency modulation.

For abstract, see STAR 1120

N73-29104/9GA PC$8.50/MF$1.45
Washington Univ., St. Louis, Mo. Communications Group.
PLANNING ALTERNATIVE ORGANIZATIONAL FRAMEWORKS FOR A LARGE SCALE EDUCATIONAL TELECOMMUNICATIONS SYSTEM SERVED BY FIXED/BROADCAST SATELLITES.
J. Walkmeyer. Jun 73, 126p NASA-CR-133646, MEMO-73/3
Contract NGR-26-008-054

Descriptors: *Communication satellites, *Education, *Telecommunication, Organizations, Systems engineering, Tradeoffs.

For abstract, see STAR 1120

N73-29127/0GA PC$3.00/MF$1.45
Japan Broadcasting Corp., Tokyo. Radio Frequency Engineering and Satellite Broadcasting Research Group.
SIMPLIFIED 12GHZ LOW NOISE CONVERTER WITH MOUNTED PLANAR CIRCUIT IN WAVEGUIDE.
Y. Konishi, K. Uenakada, N. Yazawa, N. Hoshino, and T. Takahashi. Mar 73, 8p NHK-LABS-NOTE-161
Tran-Transl. Into English of the Book "(Microwave)" Japan, Iece, 26 Oct. 1972 p 72-76.

Descriptors: *Converters, *Electromagnetic noise, *Ground stations, *Sensitivity, *Spacecraft communication, Noise reduction, Radio frequency interference.

For abstract, see STAR 1120

PATENT-3 703 719/GA Not available NTIS
Department of the Navy Washington D C
SEQUENCE MATRIX.
Patent,
Henry R. Beyer, Thomas F. Long, and Richard G. DeSipio. Filed 31 May 67, patented 21 Nov 72, 7p
Rept nos. PAT-APPL 644 439,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Data transmission systems, Coding), (*Patents, *Coding), Digital systems, Logic circuits, Sequences, Shift registers, Timing circuits.
Identifiers: *Decoders, PAT-CL-340-347-DD.

The patent describes a sequence matrix for decoding n binary events each having m different states without the need for a clock or a data message preamble. Sequential binary input signals are applied to an input decoder which provides steering signals to a sequence register for storing the sequential information to provide a parallel pure binary word readout. The steering signals are

shifted from one storage element in the shift register to another by shift pulses generated from the sequential input signals. A timing circuit triggered by the shift pulses initiates a time gate during which the sequential input signals must be processed or the register will be reset without providing a readout. The decoder readout from the sequence register is displayed on a decoder display.

PATENT-3 704 420/GA Not available NTIS
Department of the Navy Washington D C
AUTOMATIC FREQUENCY CONTROL FOR SUPPRESSED CARRIER RECEIVERS.
Patent,
Oswald G. Villard, Jr. Filed 20 Jul 70, patented 28 Nov 72, 8p Rept nos. PAT-APPL-56 594,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Automatic frequency control, Radio receivers), (*Patents, Automatic frequency control), Single sideband communication systems.
Identifiers: PAT-CL-325-329.

The patent describes an automatic frequency control circuit for receivers of suppressed carrier SSB voice signals. First, the incoming signals are rectified in a conventional AM diode detector. The audio output, for vowels and voiced sounds, will consist primarily of the fundamental and harmonics of the vocal cord vibrations. This harmonic spectrum is then compared with the analogous voice harmonics at the output of a product detector. If the compared voice harmonics are mismatched in audio frequency, then an error signal is generated which is used to adjust the frequency of the locally generated carrier signal which is injected into the product detector. Frequency adjustment will continue until the error signal approaches zero and there is no voice harmonic frequency mismatch.

PATENT-3 714 498/GA Not available NTIS
Department of the Navy Washington D C
TELEVISION CAMERA.
Patent,
William H. Woodworth. Filed 16 Feb 70, patented 30 Jan 73, 9p Rept nos. PAT-APPL-11 492,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D. C. 20231 $0.50.

Descriptors: (*Television cameras, *Patents), Deflection, Electrostatic fields, Relaxation oscillators, Integrators, Phase shifters.
Identifiers: PAT-CL-315-19.

The patent describes a television camera having an electrostatic rather than electromagnetic deflection system. The camera comprises a time-base generator which supplies separate pulses to the vertical and horizontal deflection circuits, each of which has a monostable multivibrator, an integrator and a unity-gain phase inverter. The tube output is amplified by a three-stage, two-pole response per stage, amplifier.

PATENT-3 715 668/GA Not available NTIS
Office of the Secretary of the Army Washington D C
AIR-LAUNCHED RADIO APPARATUS.
Patent,
Theodore C. Herring, Ernest F. Bracht, Robert E. Ainslie, Eugene M. Todd, and Joseph J. Franz.
Filed 26 Sep 67, patented 6 Feb 73, 5p Rept nos. PAT-APPL-670 807,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Radio equipment, Parachute descents), (*Patents, Radio equipment), Unfurlable antennas, Parachutes, Packaging.
Identifiers: PAT-CL-325-112.

The patent describes an air-deliverable package for radio apparatus having a self-deploying antenna system. It includes a flexible RF radiating element and laterally projecting, flexible ground plane elements which are foldable about a packed main parachute received within a tubular container which, in turn, is detachably connected to the aft end of the package and is separated therefrom by deployment of a pilot chute to enable deployment of the main parachute and the antenna system.

PATENT-3 721 763/GA Not available NTIS
Department of the Navy Washington D C
SINGLE LINE BI-DIRECTIONAL DATA TRANSMISSION SYSTEM.
Patent,
Alfred A. Homan, and Herbert P. Brockman. Filed 29 Jul 71, patented 20 Mar 73, 7p Rept nos. PAT-APPL-167 409,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Data transmission systems, Time sharing), (*Patents, Data transmission systems), Digital systems, Transmission lines, Polarization, Pulse generators, Demodulators, Pulse communication systems.
Identifiers: PAT-CL-178-58-R.

The patent relates to digital information transmitted in either direction on a time sharing basis over a single transmission line. Identical transmit/receive stations send out pulse signals of one polarity and detectors are adapted to receive pulses of the opposite polarity. The detectors block pulses of the same polarity as those that are generated and transmitted from its own station. A transmission line is transformer coupled to each station with an inversion in the line so that the signal received at the opposite station is of inverted polarity to that transmitted.

PB-224 073/7GA PC$3.75/MF$1.45
Boeing Aerospace Co., Seattle, Wash.
CALLBOXES TO COMPUTERS - A COMPUTERIZED EMERGENCY DISPATCH SYSTEM SPECIFICATION FOR THE TACOMA - PIERCE COUNTY LAW ENFORCEMENT COMMUNICATION CENTER,
A. Frederick Fath, and Joseph T. Muldoon. 1 Sep 73, 34p
Grant NSF-GT-34903

Descriptors: (*Telecommunication, Law enforcement), Automation, Decision making, Specifications, Fire protection, Computer programming, Washington(State).
Identifiers: Emergency services, Tacoma(Washington), Pierce County(Washington).

A report is made on a Computerized Emergency Dispatch System specification for the Tacoma-Pierce County Communications Center was prepared in response to a request for technological assistance through the City's Totem One Program, by the Tacoma Police Department. The specifications are to provide the design requirement for a computer system which will apply the rapid, information processing capabilities of state-of-the-art, electronic, data processing equipment to the functions of dispatching Police and Fire units in response to the needs of the citizens of the City of Tacoma and Pierce County. The Totem One Program is a technology transfer effort. The implementation of this Computer-Assisted Dispatch System will complete the final phase of a comprehensive, multi-departmental, inter-agency, communications system which is being developed in the City of Tacoma and Pierce County.

PB-224 245/1GA PC$3.50/MF$1.45
RAND Corp., Santa Monica, Calif.
CABLE TELEVISION: A GUIDE TO THE TECHNOLOGY,
Carl Pilnick, and Walter S. Baer. Jun 73, 75p* R-1141-NSF NSF-RA/S-73-013
Grant NSF-GI-32107

Descriptors: (*Closed circuit television, Communication management), Decision making, Utilization, Local government, Systems engineering.
Identifiers: *Cable television, CATV(Community Antenna Television).

The report describes the present state of cable technology, technical approaches to meeting the new FCC requirements for major market cable systems, and the technology for new cable services. It also discusses the cost considerations encountered in building a new cable system or expanding one now in operation. A number of problem areas that confront the cable industry and local decisionmakers, including expanded channel capacity, technical standards, two-way communications, and system interconnection are all identified. The report is written to shed some light on the realistic policy alternatives available.

PB-224 246/9GA PC$3.50/MF$1.45
RAND Corp., Santa Monica, Calif.
CABLE TELEVISION: APPLICATIONS FOR MUNICIPAL SERVICES,
Robert K. Yin. May 73, 54p* R-1140-NSF NSF-RA/S-73-012
Grant NSF-GI-32107

Descriptors: (*Closed circuit television, Communications management), Municipalities, Utilization, Local government, Decision making.
Identifiers: *Cable television, CATV(Community Antenna Television).

The report reviews the many municipal service applications for cable TV. Urban cable is unlike rural systems, which have prospered by bringing television signals to viewers inadequately served by broadcast stations. Urban systems will have to compete with good over-the-air reception prevailing in most cities. The report is to help municipal officials as they decide whether and how to use the single municipal channel mandated by current FCC rules for new urban cable systems, and what longer-term issues may be relevant. The report categorizes municipal applications in two different ways: according to the cable system characteristics they require, and according to major public service areas. Eight general conclusions are relevant to the decisionmaking needs of municipal officials.

PB-224 269/1GA PC$3.75/MF$1.45
RAND Corp., Santa Monica, Calif.
CABLE TELEVISION: MAKING PUBLIC ACCESS EFFECTIVE,
Richard C. Kletter. May 73, 84p* R-1142-NSF NSF-RA/S-73-014

Descriptors: (*Closed circuit television, Utilization), Communication management, Decision making, Availability, Regulations, Cost analysis.
Identifiers: *Cable television, Public access.

The report strongly advocates citizen involvement in public access and presents the issues from an activist's point of view.

PB-224 270/9GA PC$7.75/MF$1.45
RAND Corp., Santa Monica, Calif.
CABLE TELEVISION: A GUIDE TO FEDERAL REGULATIONS,
Steven R. Rivkin. Mar 73, 355p* R-1138-NSF NSF-RA/S-73-010
Grant NSF-GI-32107

Descriptors: (*Closed circuit television, *Regulations), Public law, Communications management, Decision making, Local government, Government policies.
Identifiers: *Cable television, Federal Communications Commission, CATV(Community Antenna Television).

The report describes and analyzes federal laws and regulations that presently apply to cable television. Most relevant documents are combined in a convenient volume and their meaning clarified so as to constitute a useful guide for state and local decisionmakers, the cable industry, and interested citizen groups. The Summary and Overview is presented in Part I to provide an overall perspective and to serve as guide to the more detailed Part II and basic source materials set out in Part III. Part II - Cable Television Policies and Rules is in six sections. Part III is a compendium of relevant documents.

UCRL-6128(Del.)/GA PC$4.50/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
BASSOON: ELF COMMUNICATION SYSTEM.
N. C. Christofilos. 29 Aug 60, 49p
Contract W-7405-eng-48

Descriptors: (*Antennas, *Planning), (*Rf systems, Planning), (*Submarines, Communications), (*Communications, Planning), Design, Signals.

For abstract, see NSA 28 05, number 12591.

17C. Direction Finding

AD-767 684/4GA PC$11.00/MF$1.45
Naval Postgraduate School Monterey Calif
TECHNICAL EVALUATION OF A RADIO DIRECTION FINDING SYSTEM UTILIZING COMPLEMENTARY SEQUENCE PHASE CODING OF INCIDENT SIGNALS.
Master's thesis,
David Louis Prisaznick. Jun 73, 179p

Descriptors: (*Direction finding, Coding), Radio equipment, Mathematical models, Omnidirectional antennas, Correlation techniques, Theses, Computer programs, High frequency, Feasibility studies.
Identifiers: Computerized simulation.

A new radio direction finding system has been proposed which offers advantages over current systems in the areas of bearing accuracy and simplicity of antenna design requirements. The system phase codes the outputs of a linear array of omnidirectional antennas, and then combines these time-separated signals so that the sequences produced uniquely determine the signal arrival angle. A correlation process using matched filters is performed on the resulting sequences in order to determine the corresponding arrival angle. Resolution of the inherent ambiguities of the system, due to elevation angle and adjacent quadrant azimuth components is demonstrated using a two-array technique. A computer simulation of the phase coding/decoding process, using an idealized signal model is used to evaluate the performance of the system for various input noise conditions, array lengths, and input signal parameters. (Author)

AD-768 025/9GA PC$3.50/MF$1.45
Illinois Univ Urbana Radiolocation Research Lab
WAVE POLARIZATION MEASUREMENTS IN HF SHORT RANGE RADIO LOCATION.
Technical rept. no. 45,
William M. Glenn, Jr., and Albert D. Bailey. Aug 73, 67p Rept nos. RRL-Pub-436, UILU-ENG-73-2555
Contract N00014-67-A-0305-0002

Descriptors: (*Range finding, Radio equipment), Polarization, Position finding, High frequency, Ionospheric propagation, Angle of arrival.

Wave polarization measurements in HF radiolocation are often necessary but not sufficient per se for complete solution of the radiolocation problem. There are cases where the radio signals arrive via steeply downcoming paths. In these latter cases polarization measurements alone may be sufficient to fix the most probable range of the signal source. The report discusses the design, construction and testing of a radio polarimeter system for use in the neighborhood of 5 MHz. In addition to the three-orthogonal-dipole-antenna element array, it uses quadrature hybrids, a matched in gain and phase triple-channel radio receiver and associated logic to separate the two characteristic polarizations. The systems are shown to be successful when working under the conditions and constraints of the design. Gravity waves and traveling disturbances in the ionosphere will produce additional effects which have not been considered here. (Author)

17E. Infrared and Ultraviolet Detection

AD-767 738/8GA Reprint
Rensselaer Polytechnic Inst Troy N Y Div of Electrophysics
COMPARATIVE STUDIES OF NOISE LIMITATIONS IN SUPERCONDUCTING THIN-FILM RADIATION DETECTORS,
Roger M. Katz, and Kenneth Rose. 31 Jul 72, 5p
AFOSR-TR-73-1653
Grant AF-AFOSR-2324-72
Revision of report dated 18 May 71.
Availability: Pub. in Proceedings of the IEEE, v61 n1 p55-58 Jan 73.

Descriptors: (*Bolometers, Superconductors), (*Superconductors, Noise(Radio)), Films, Thermal conductivity, Signal-to-noise ratio, Cryogenics, Thermal radiation, Sensitivity.
Identifiers: Thin films.

The authors report measurements on the noise limitation of superconducting thin films operating as thermal detectors (bolometers) and as current-dependent detectors. By making measurements in each mode on the same film it is possible to make a comparative study of the noise limitations for both detection mechanisms in the same device. Thin tin films with normal state sheet resistances on the order of 100 ohm per square have been studied. The devices were scribed to produce total normal state resistances on the order of 10k and were mounted in the vacuum chamber of a demountable tail Dewar so that they were not in direct contact with liquid helium. The resulting bolometers have response times and sensitivities similar to those of Martin and Bloor. The dominant noise mechanisms we have observed appear to be Johnson noise in the thermal mode and 1/f noise in the current mode. These results confirm previous conclusions regarding the sensitivity of these films as radiation detectors. (Author)

PATENT-3 720 834/GA Not available NTIS
Department of the Navy Washington D C
HIGH POWER INFRARED IMAGING DEVICE.
Patent,
Philip J. Allen. Filed 15 Jun 71, patented 13 Mar 73, 5p Rept nos. PAT-APPL-153 325,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Infrared detectors, *Patents), Irasers, Infrared images, Image converters.
Identifiers: PAT-CL-250-83-3-H, Liquid crystal display systems, Infrared upconversion, Laser beams.

The patent disclosure is directed to a liquid crystal detector for imaging high power infrared laser beams. The system includes at least one detector screen associated with a container including boiling a solution therein to maintain a constant temperature for the detector screen. The detector screen is operative to produce a visible image of incident infrared laser light. The boiling solution not only maintains a constant temperature for the liquid crystal medium but provides a means for dissipating the heat of the laser beam which further heats the solution to form a vapor or steam at a controlled constant pressure.

17F. Magnetic Detection

PAT-APPL-327969/GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
HALL EFFECT MAGNETOMETER.
Patent Application.
J. A. Woollam, H. A. Beale, and I. L. Spain. Filed 30 Jan 73, 9p NASA-CASE-LEW-11632-2,
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Hall effect, *Magnetic fields, *Magnetometers, Magnetic measurement, Patent applications.

A magnetometer utilizing a single crystal of Bi2Se3 with a rhombohedral crystal structure is described along with a method for making such a device. The Bi2Se3 has a positive or negative Hall coefficient and a carrier concentration of about 10 to the 18th power to 10 to the 20th power per cubic centimeter.

17G. Navigation and Guidance

AD-767 685/1GA PC$6.25/MF$1.45
Naval Postgraduate School Monterey Calif
A MICROCOMPUTER SOLUTION TO MANEUVERING BOARD PROBLEMS.
Master's thesis,
Kenneth Harper Kerns, and Roger Stuart Cooper. Jun 73, 83p

Descriptors: (*Navigation computers, Design), (*Ships, Maneuverability), Integrated circuits, Logic circuits, Computer programs, Data processing systems, Theses.
Identifiers: Microprogramming, Metal oxide semiconductors, Large scale integrated circuits, Collision avoidance.

A special-purpose digital computer has been developed using the new MOS LSI microprocessor technology. The primary goal of this work was to solve a fairly complicated task using a minimal amount of random logic and limited development time. This computing system solves ships' maneuvering board problems including the determination of course, speed, and closest point of approach of other ships. Ten contacts can be tracked simultaneously. The triangulation involved in these calculations is performed using a decimal version of the CORDIC algorithm. A complete maneuvering situation can be computed in 4.5 seconds. Except for hardware required to drive the displays, all logic is contained in the software-encoded read-only-memory chips, which drive a single CPU chip. Approximately eight hundred man-hours were required to develop the programs and prototype the hardware. The system is modular and easy to maintain, low in bulk, power consumption, and cost. (Author)

AD-767 901/2GA PC$3.00/MF$1.45
Tactical Air Warfare Center Eglin AFB Fla
SIMPLIFIED VISUAL APPROACH SLOPE INDICATOR (VASI).
Operational test and evaluation Final rept. 16 Apr-31 Jul 73,
James F. Yealy. Sep 73, 27p

Descriptors: (*Glide path systems, *Landing aids), Terminal flight facilities, Design, Mobility, Construction, Approach lights, Feasibility studies.
Identifiers: VASI(Visual Approach Slope Indicators), Visual approach slope indicators.

The purpose of this operational test and evaluation was to determine the value of a simplified visual approach slope indicator (VASI) system to the USAF Special Operations Force by accomplishing

three test objectives: formulate and document construction criteria, establish user acceptance/rejection, and incorporate an air-transportable capability. Two types of systems were designed and constructed for user evaluation. Both were identical except for the support arrangement. One system was embedded in the ground, and the other was anchored to the ground by using sandbags. Both systems could be transported by air. Two hundred and eighty approaches were flown against the systems by 61 different pilots. The majority of pilots indicated that the systems were effective beginning at distances ranging from 1/2 to 1 mile and ending at 25- to 50-foot altitude (approximately 450 to 950 feet in front of the boards) during night or daytime operation. The best color combination was determined to be black stripe on white background. It was recommended that USAF Special Operations Force retain the two systems for potential future use during deployments to austere bases, temporary airfields, and landing zones not equipped with standard VASI. (Author)

AD-767 973/1GA PC$3.00/MF$1.45
Texas Univ Austin Applied Research Labs
RANGE READER AND RANGE READER TEST SET,
Hamil W. Cooper. 24 Jul 73, 28p Rept no. ARL-TM-73-14
Contract N60921-73-C-0107
Report on Project CAPTOR.

Descriptors: (*Range finding, Underwater navigation), Underwater sound equipment, Test sets, Synchronization(Electronics), Checkout procedures, Submarines, Passive.

The report describes the operational procedures and theory of operation of the ARL Range Reader and Range Reader Test Set. The Range Reader No. 1 is part of a submarine navigation system used in conjunction with a larger system, called the Navigation, Tracking, and Communication System, which allows the personnel on shore to track and communicate with the submarine.

AD-768 049/9GA PC$3.75/MF$1.45
Transportation Systems Center Cambridge Mass
USER'S MANUAL FOR ILSLOC: SIMULATION FOR DEROGATION EFFECTS ON THE LOCALIZER PORTION OF THE INSTRUMENT LANDING SYSTEM.
Operational handbook,
G. Chin, L. Jordan, D. Kahn, S. Morin, and D. Newsom. Aug 73, 89p Rept no. DOT-TSC-FAA-73-13 FAA-RD-73-76

Descriptors: (*Search radar, Air traffic control systems), (*Computer programs, *Instruction manuals), (*Instrument landings, *Landing aids), (*Aviation safety, Search radar), Mathematical prediction, Aircraft landings, Antenna arrays, Antenna radiation patterns, Flight paths, Programming(Computers), Handbooks.
Identifiers: ILSLOC computer program, Localizer beams, Derogation effects, Computerized simulation.

The manual presents the complete ILSLOC computer program package. In addition to including a thorough description of the program itself and a commented listing, the manual contains a brief description of the ILS system and antenna patterns. To illustrate the program a test case was created and the figures of the case are incorporated in the report. Program DYNM and program ILSPLT are included as Appendices. The ILSPLT, complete with sample graphs, is a plotting routine for ILSLOC. For a technical mathematical analysis of the system, the FAA report 'Instrument Landing System Scattering' No. FAA-RD-72-137 should be consulted. (Author)

AD-768 202/4GA PC$3.75/MF$1.45
National Aviation Facilities Experimental Center Atlantic City N J
SYSTEM INTEGRATION AND SYSTEM SHAKEDOWN TESTS, NAS ENROUTE STAGE A MODEL A3D1.
Final rept. Sep 72-Apr 73,
Joseph Levy, and Victor Crawford. Oct 73, 77p Rept no. FAA-NA-73-55 FAA-RD-73-135

Descriptors: (*Air traffic control systems, Automation), Systems engineering, Integrated systems, Tests.
Identifiers: *Air route traffic control.

A series of tests of the National Air Space (NAS) Enroute Stage A Model A3d1 System were conducted over a period of seven months in a total system environment using simulated and live radar inputs to evaluate the total system capability to accomplish the air traffic control task and to provide guidance for conduct of system integration and system shakedown tests at field facilities. The report describes these tests and the results obtained. (Author)

AD-768 203/2GA PC$3.00/MF$1.45
National Aviation Facilities Experimental Center Atlantic City N J
FIELD EVALUATION OF ARTS II B (TRACAB).
Interim rept. Feb-Apr 73,
Robert A. Clark, and James F. Akers. Oct 73, 50p Rept no. FAA-NA-73-54 FAA-RD-73-119

Descriptors: (*Air traffic control systems, Automation), Radar beacons, Data processing systems, Display systems, Acceptability.
Identifiers: ARTS(Automated Radar Terminal Systems), Automated radar terminal systems.

A programmable ARTS (Automated Radar Terminal System) II B, non-tracking, beacon alphanumeric system was installed in a TRACAB (Terminal Radar Approach Control Cab) configuration in a live air traffic control tower environment. Operational suitability and techniques to be used in the automation program for low-density terminal/towers were evaluated. The system was evaluated over a six-week period through collection of subjective data obtained from controller questionnaires. It was concluded that while suitable for application in a TRACAB (Terminal Radar Approach Control Cab) environment and compatible with the controller, extensive modification to both display subsystem and software were required to improve its usefulness. (Author)

AD-768 354/3GA PC$10.25/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
APPLICATION OF THE AVIONICS MULTIPROCESSOR TO INERTIAL NAVIGATION.
Master's thesis,
James A. Haugen. Jun 73, 165p Rept no. GGC/EE/73-5

Descriptors: (*Navigation computers, *Inertial navigation), Data processing systems, Multiple operation, Input-output devices, Specifications, Command + control systems, Aircraft equipment, Programming(Computers), Test methods, Theses.
Identifiers: *Multiprocessors, *Avionics.

The Burroughs Avionics Multiprocessor System was developed as a flexible avionics computer system. Its flexibility was obtained through microprogrammability and modularity. One of its possible application areas is inertial navigation. The goal was to find the best system configuration and to microprogram it for inertial navigation. After examining the system organization and developing application specifications, it was decided that navigation computer emulation was the best way to apply the system to navigation data processing. This emulator is developed and a testing sequence set up. A program which solves the inertial navigation equations is also developed for the emulator. A program test sequence is given, including two simulated test flight paths. (Author)

COM-73-50837/6GA MF$1.45
National Ocean Survey, Rockville, Md.
UNITED STATES COAST PILOT 3 . ELEVENTH EDITION, JULY-1973. ALANTIC COAST - SANDY HOOK TO CAPE HENRY.
Jul 73, 251p NOAA-73083002
Paper copy available from National Ocean Survey, Washington, D.C. 20852 $2.00.

Descriptors: (*Navigational aids, *Coasts), (*Waterways(Transportation), Navigational aids), Regulations, Marine Meteorology, Weather communication, Anchorages, Harbors, Seaports, Channels(Waterways), Climate, Tables(Data).
Identifiers: Intracoastal waterways.

The National Ocean Survey Coast Pilots are a series of eight nautical books that cover a wide variety of information important to navigators of U.S. coastal and intracoastal waters. Coast Pilot subjects include navigation regulations, outstanding landmarks, channel and anchorage peculiarities, dangers, weather, ice, freshets, routes, pilotage, and port facilities. This issue provides the information for the Atlantic Coast - Sandy Hook to Cape Henry area. (Author)

17H. Optical Detection

AD-767 903/8GA PC$3.00/MF$1.45
Aerospace Corp El Segundo Calif Lab Operations
CARRIER DIFFUSION DEGRADATION OF MODULATION TRANSFER FUNCTION IN CHARGE COUPLED IMAGERS.
Rept. for Feb-Jun 73,
David H. Seib. 24 Aug 73, 42p Rept no. TR-0074(4230-50)-3 SAMSO-TR-73-301
Contract F04701-73-C-0074

Descriptors: (*Image intensifiers(Electronics), Low-intensity illumination), Semiconductor devices, Images, Transfer functions, Silicon.
Identifiers: Modulation transfer functions, Charge coupled devices, *Low light level viewing.

Expressions for the modulation transfer function due to minority carrier diffusion in charge coupled imagers are calculated, following the approach used by Crowell and Labuda. Both front and rear optical illumination of the charge coupled imager are considered; for the rear illumination case interference effects are included. The modulation transfer function for electron excitation is also considered. In all cases, the expressions for the modulation transfer function have been evaluated using typical charge coupled imager parameters. The quantum efficiency predicted by the minority carrier diffusion model is also briefly discussed. (Author)

17I. Radar Detection

AD-767 755/2GA PC$11.25/1.45
Hughes Aircraft Co Canoga Park Calif Missile Systems Div
PHOENIX WEAPON CONTROL SYSTEM. RADOME IMPROVEMENT PROGRAM; PMS 340-1/2324. VOLUME I. DESIGN AND R-F MEASUREMENT.
Final engineering rept. Jun 69-Jul 70.
Oct 70, 182p Rept no. HAC-Ref-B3795-Vol-1
Contract N00019-68-C-0295

Descriptors: (*Radomes, Design), (*Guided missiles(Air-to-air), Radomes), Proportional navigation, Slender bodies, Costs, Rain, Water impingement, Erosion, Radiofrequency pulses.
Identifiers: Phoenix, AIM-54A missiles, YAIM-54A missiles.

The development of a new radome for the YAIM-54A Phoenix Missile is described. The radome is a secant ogive shape which replaces the old tangent ogive and features a manufacturing process of lapping the inside contour instead of grinding to achieve low manufacturing cost. Low aerodynam-

ic drag is achieved with the new more pointed shape and improved rain erosion resistance is achieved by virtue of the metal tip which is used to plug the hole in the tip of the ceramic radome. (Modified author abstract)

AD-767 965/7GA PC$5.00/MF$1.45
National Aviation Facilities Experimental Center Atlantic City N J
COMMON DIGITIZER (FYQ-47) RADIO FREQUENCY INTERFERENCE MEASUREMENTS AT THE ELWOOD, NEW JERSEY, LONG RANGE RADAR SITE.
Interim rept. Feb-Mar 73,
George C. Apostolakis, and John J. Fisher, Jr. Oct 73, 57p Rept no. FAA-NA-73-41 FAA-RD-73-123

Descriptors: (*Radar equipment, Radiofrequency interference), (*Analog-to-digital converters, Radiofrequency interference), Radar stations, Electromagnetic compatibility, Very high frequency, Radio communication systems.
Identifiers: AN/FYQ-47.

Operating Long Range Radar Sites (LRRS) have reported that the Common Digitizer (CD) interferes with the Back-Up Emergency Communications (BUEC) equipments when the CD doors are OPENED for maintenance purposes. This problem was investigated. The investigation consisted of making Radio Frequency Interference (RFI) field strength measurements at various locations, both inside and outside the LRRS building as well as on the roof and radome catwalk. The measurements were made for various combinations of equipments being on with the CD doors both OPENED and CLOSED. It was determined that the CD with doors OPEN is the major source of RFI. The radiating source within the CD was traced to its core memory. With the CD doors CLOSED, RFI is reduced to negligible levels; furthermore, the roof of the building reduces the CD RFI to negligible proportions. (Modified author abstract)

AD-768 330/3GA PC$4.25/MF$1.45
Rome Air Development Center Griffiss AFB N Y
DETECTION PERFORMANCE OF THE AN/TPN-19 PAR (PRECISION APPROACH RADAR).
Technical rept.,
Vincent C. Vannicola. Aug 73, 120p Rept no. RADC-TR-72-238

Descriptors: (*Ground-controlled approach radar, Detection), Probability, Moving target indicators, Radar scanning, Signal-to-noise ratio, Computer programs.
Identifiers: AN/TPN-19.

The purpose of the report is to determine the receiver operating characteristics of the AN/TPN-19 PAR Air Force radar in some of its operating modes. The scan mode and the coherent MTI (Moving Target Indicator) mode will be considered for the case when the received target signal is corrupted by white Gaussian noise only. The MTI loss (the increase in signal-to-noise ratio required for the same detection performance when switching from the scan mode to the MTI mode) is also determined and discussed. Methods for improving the MTI performance are given and evaluated. (Author)

AD-768 336/0GA PC$3.00/MF$1.45
Aerospace Corp San Bernardino Calif Reentry Systems Div
VAN VLECK REVISITED - THE RCS (RADAR CROSS SECTION) OF THIN WIRES.
Rept. for Jul 72-Apr 73,
M. T. Tavis. 1 Jul 73, 41p Rept no. TR-0074(4450-16)-1 SAMSO-TR-73-307
Contract F04701-73-C-0074

Descriptors: (*Radar echo areas, Wire), Numerical analysis, Mathematical prediction, Approximation(Mathematics).

The approximate theory of radar reflection from thin wires by Van Vleck, et. al., gives very good average radar cross section (RCS) results and good angular RCS results except end-on. In the paper, the nature of this end-on discrepancy is examined. It is found that, if the complete expressions derived by Van Vleck, et. al., are used without the approximations made to simplify calculation of the average RCS over all angles of incidence, then very accurate RCS results are predicted for nearly all angles of incidence and for all the wire length-to-wavelength ratios between 0.45 and 50. Comparisons with the numerical results of a source distribution technique (SDT) computer program and with the results due to Ufimtsev are shown. (Author)

PATENT-3 701 152/GA Not available NTIS
Department of the Navy Washington D C
BIPOLAR SAMPLE AND HOLD CIRCUIT.
Patent,
Harold K. Howard. Filed 20 Jul 70, patented 24 Oct 72, 9p Rept nos. PAT-APPL-56 562,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Radar equipment, *Patents), Circuits, Video signals, Samplers, Integrators, Analog-to-Digital converters, Monopulse radar.
Identifiers: Signal processing, PAT-CL-343-16-M.

The patent describes a bipolar sample and hold circuit which samples raw video signal returns from a radar, integrates the energy of the signal during that sample, and holds the integrated sample long enough for an analog to digital (A/D) converter to convert the signal energy to a digital number.

17J. Seismic Detection

AD-767 878/2GA PC$3.00/MF$1.45
Massachusetts Inst of Tech Lexington Lincoln Lab
ON ESTIMATING THE EFFECT OF ASIAN EARTHQUAKE CODAS ON THE EXPLOSION DETECTION CAPABILITY OF LASA.
Technical note,
John R. Filson. 13 Jul 73, 43p Rept no. TN-1973-29 ESD-TR-73-227
Contract F19628-73-C-0002, ARPA Order-512

Descriptors: (*Seismological stations, Noise), (*Underground explosions, Detection), Earthquakes, Intensity, Nuclear explosions, Mathematical prediction, Spectrum signatures, Asia, Japan.
Identifiers: LASA(Large Aperture Seismic Array), Large aperture seismic array, Kurile Islands, Kamchatka Peninsula, Seismic detection.

A study was made of the short period detection characteristics of LASA within the codas of earthquakes occurring in the Kurile Island region and near the Kamchatka peninsula. The study yielded an estimate of the time interval that LASA would not detect an explosion in central Asia following an earthquake in either of the two seismic regions; this estimate is given as a function of earthquake-explosion magnitude difference. An attempt was also made to model the hypothetical cases where the explosions were collocated with the earthquakes in either the Kuriles or Kamchatka regions and estimates of the mask time intervals are given for these cases. The results of the experiments are extended in order to estimate the total time, during the decade 1961-1972, that an explosion of a given magnitude in either central Asia, the Kuriles, or Kamchatka would have gone undetected at LASA due to the seismicity of the latter two regions. This total mask time, under various assumptions, is quantified into separate time intervals in the cases where the explosions and earthquakes are collocated. A result of this quantification is that, in the context of this experiment, there were a maximum of 300 two minute time intervals during the decade that a magnitude 5.0 explosion in the Kuriles might possibly have gone undetected at LASA, and 10 such intervals that the explosion most probably would have gone undetected, due to the seismicity of the Kurile Islands region. (Author)

AD-768 322/0GA PC$2.75/MF$1.45
Texas Instruments Inc Dallas Equipment Group
EXTENDED ARRAY EVALUATION PROGRAM.
Quarterly rept. no. 4, 1 Jan-31 Mar 73,
Terence W. Harley. 15 Apr 73, 16p
Contract F33657-72-C-0725, ARPA Order-1714
See also report dated 15 Jan 73, AD-761 813.

Descriptors: (*Seismological stations, Noise), (*Underground explosions, Detection), Seismometers, Networks, Performance(Engineering), Nuclear explosions, Earthquakes, Data processing systems, Microseisms, Signal-to-noise ratio, Power spectra, Alaska, Norway.
Identifiers: Vela Uniform, ALPA(Alaskan Long Period Array), Alaskan long period array, NORSAR(Norwegian Seismic Array), Norwegian seismic array, Seismic arrays, Seismic noise, Very long period seismometers, Long period seismometers, Short period seismometers, Signal processing.

Contents:
ALPA evaluation;
NORSAR long period evaluation;
NORSAR sort period evaluation;
VLPE evaluation;
Network evaluation and system study.

AD-768 323/8GA PC$2.75/MF$1.45
Texas Instruments Inc Dallas Equipment Group
EXTENDED ARRAY EVALUATION PROGRAM.
Quarterly rept. no. 5, 1 Apr-30 Jun 73,
Terence W. Harley. 13 Jul 73, 15p
Contract F33657-72-C-0725, ARPA Order-1714
See also report dated 15 Apr 73, AD-768 322.

Descriptors: (*Seismological stations, Noise), (*Underground explosions, Detection), Seismometers, Networks, Performance(Engineering), Nuclear explosions, Earthquakes, Data processing systems, Signal-to-noise ratio, Power spectra, Norway.
Identifiers: Vela Uniform, NORSAR(Norwegian Seismic Array), Norwegian seismic array, Seismic noise, Very long period seismometers, Long period seismometers, Short period seismometers, Seismic arrays.

Contents:
NORSAR long period evaluation;
NORSAR short period evaluation;
VLPE evaluation;
Research;
Seismic networks system study.

18. NUCLEAR SCIENCES AND TECHNOLOGY

18A. Fusion Devices (Thermonuclear)

BNL-17875/GA PC$3.25/MF$1.45
Brookhaven National Lab., Upton, N. Y.
FUSION REACTIONS IN COLLIDING BEAMS.
J. P. Blewett. 27 Apr 73, 22p

Descriptors: (*Deuteron beams, *Thermonuclear reactions), (*Triton beams, Thermonuclear reactions), Colliding beams, Electron beams, Focusing, Relativistic range.

For abstract, see NSA 28 04, number 09838.

CONF-730705-4/GA PC$3.00/MF$1.45
Princeton Univ., N. J. Plasma Physics Lab.

POLOIDAL FIELD MEASUREMENTS IN THE ST TOKAMAK BY HARMONIC GENERATION AT THE UPPER HYBRID LAYER.
R. Cano, I. Fidone, and J. Hosea. 1972, 4p

Descriptors: (*Tokamak model st, *Magnetic fields), Electromagnetic radiation, Hybrid resonance, Plasma, Polarization, Wave propagation.

For abstract, see NSA 28 05, number 11998.

CONF-730805-4/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
CRYOGENIC SYSTEM FOR A TOROIDAL THERMONUCLEAR FUSION EXPERIMENT.
H. M. Long, and J. N. Jr. Luton. 1972, 10p

Descriptors: (*Ormak devices, *Cryogenics), Heat exchangers, Toroidal configuration.

For abstract, see NSA 28 06, number 15131.

CONF-730902-1/GA PC$3.50/MF$1.45
Oak Ridge National Lab., Tenn.
FORESEEABLE THERMAL, MECHANICAL, AND MATERIALS ENGINEERING PROBLEMS OF FUSION REACTOR POWER PLANTS.
A. P. Fraas. 1972, 30p
Contract W-7405-eng-26

Descriptors: (*Thermonuclear reactors, *Design), (*Power plants, Thermonuclear reactors), Coolants, Engineering, Heat transfer, Lithium, Mechanical structures, Planning, Potassium, Superconducting magnets, Thermal insulation.

For abstract, see NSA 28 06, number 14201.

COO-3237-18/GA PC$3.00/MF$1.45
Institute for Advanced Study, Princeton, N. J.
LASER FUSION AND PARAMETRIC INSTABILITIES.
M. N. Rosenbluth, and R. Z. Sagdeev. 1973, 15p
Contract AT(11-1)-3237

Descriptors: (*Laser-produced plasma, Plasma instability), (*Plasma instability, *Parametric instabilities), Absorption, Damping, Deuterium, Fuel pellets, Interactions, Laser radiation, Plasma, Plasmons, Tritium.

For abstract, see NSA 28 06, number 14193.

EUR-CEA-FC-660/GA PC$5.25/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
BEHAVIOR OF THE PLASMA IN THE HARMONICA-TWO MACHINE.
P. Ginot, and P. Plinate. Feb 73, 62p
In French. U.S. Sales Only.

Descriptors: (*Stellarators, *Helical instability), (*Harmonica devices, Helical instability), Confinement, Plasma.

For abstract, see NSA 28 06, number 14184.

EUR-CEA-FC-682/GA PC$3.25/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
HEATING OF A PLASMA BY THE INJECTION OF FAST HELIUM ATOMS.
J. P. Girard, M. Khelladi, and D. A. Marty. Jan 73, 25p
In French. U.S. Sales Only.

Descriptors: (*Tokamak devices, *Beam injection heating), (*Plasma heating, Beam injection heating), Atoms, Beam injection, Helium, Neutral particles.

For abstract, see NSA 28 06, number 14165.

EUR-CEA-FC-687/GA PC$7.75/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
EFFECT OF COULOMBIAN COLLISIONS ON THE CONFINEMENT OF PLASMAS BY MIRROR MAGNETIC CONFIGURATIONS.
F. Werkoff. Feb 73, 113p
In French. U.S. Sales Only.

Descriptors: (*Magnetic mirrors, *Coulomb scattering), (*Plasma, *Confinement), Boltzmann equation, Deuterium, Distribution functions, Electron temperature, Electrons, Energy losses, Fokker-planck equation, Ion temperature, Ions, Magnetic traps, Plasma simulation, Tritium.

For abstract, see NSA 28 06, number 14166.

EUR-4999/GA PC$26.50/MF$1.45
European Communities, Luxembourg. Commission.
COURSE ON THE STATIONARY AND QUASI-STATIONARY TOROIDAL REACTORS.
Jun 73, 489p
U.S. Sales Only.

Descriptors: (*Thermonuclear reactors, *Lectures), Meetings, Toroidal configuration.

For abstract, see NSA 28 05, number 11999.

IPP-III-6/GA PC$4.00/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
TOKAMAK WITH AN IMMATERIAL SEPARATRIX LIMITER.
G. Lehner, and F. Pohl. Feb 73, 37p
U.S. Sales Only.

Descriptors: (*Tokamak devices, *Wall effect), Magnetic fields, Shells.

For abstract, see NSA 28 04, number 09841.

IPP-III-7/GA PC$3.75/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
MULTIPOLE TOKAMAK EQUILIBRIA.
W. Feneberg, and K. Lackner. Feb 73, 33p
U.S. Sales Only.

Descriptors: (*Tokamak devices, *Equilibrium), (*Plasma, Equilibrium), Divertors, Electric currents, Magnetohydrodynamics, Numerical solution.

For abstract, see NSA 28 04, number 09816.

IPP-IV-50/GA PC$3.25/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
OPTIMIZED LASER PULSES FOR PELLET HEATING AT REFUELLING STELLARATORS.
H. Hora. Jan 73, 25p
U.S. Sales Only.

Descriptors: (*Laser-radiation heating, *Fuel pellets), (*Stellarators, Laser-radiation heating), Carbon dioxide, Deuterium, Hot plasma, Laser radiation, Neodymium, Pulses, Tritium.

For abstract, see NSA 28 04, number 09739.

IPP-4/107/GA PC$3.25/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
CALCULATION OF TRANSIENT CURRENTS AND FORCES IN TOROIDAL COIL SYSTEMS FOR FUSION MACHINES.
R. Poehlchen, and H. Preis. Jan 73, 23p
In German. U.S. Sales Only.

Descriptors: (*W stellarators, *Magnetic fields), Electric currents, Induction, Lorentz force, Magnet coils, Toroidal configuration.

For abstract, see NSA 28 04, number 09839.

IPP-4/108/GA PC$3.25/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
OPTIMIZATION OF SUPERCONDUCTING TOROIDAL MAGNETS FOR TOKAMAK FUSION REACTORS.
K. H. Schmitter. Jan 73, 23p
U.S. Sales Only.

Descriptors: (*Superconducting magnets, *Tokamak devices), Cost, Economics, Toroidal configuration.

For abstract, see NSA 28 04, number 09840.

JAERI-M-5029/GA PC$5.45/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
ANNUAL REPORT OF JAERI THERMONUCLEAR FUSION LABORATORY FOR PERIOD ENDING MARCH 31, 1972.
Oct 72, 65p
U.S. Sales Only.

Descriptors: (*Tokamak devices, *Research programs), (*Plasma diagnostics, Research programs), Confinement, Japan, Plasma, Plasma instability.

For abstract, see NSA 28 04, number 09770.

JUL-931-RG/GA PC$5.50/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Institut fuer Reaktorentwicklung.
NEUTRONIC STUDIES OF D-T FUSION REACTOR BLANKETS.
H. Brockmann. Mar 73, 66p
In German. U.S. Sales Only.

Descriptors: (*Thermonuclear reactors, *Breeding blankets), Cross sections, Deuterium, Monte carlo method, Neutrons, Niobium, Transport theory, Tritium.

For abstract, see NSA 28 05, number 12000.

LA-UR-73-585/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
KINK INSTABILITIES IN HIGH BETA TOKAMAKS AND BELT PINCHES.
J. P. Freidberg, F. A. Haas, and B. M. Marder. 1973, 5p CONF-730705-7
Contract W-7405-eng-36

Descriptors: (*High-beta plasma, *Kink instability), (*Plasma instability, Kink instability), (*Tokamak devices, Kink instability), (*Pinch effect, Kink instability), Fourier analysis, Toroidal configuration.

For abstract, see NSA 28 05, number 11991.

LBL-1589/GA PC$3.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
DESIGN AND OPERATION OF AN INTENSE NEUTRAL BEAM SOURCE.
K. W. Ehlers, W. R. Baker, K. H. Berkner, W. S. Cooper, and W. B. Kunkel. May 73, 15p CONF-730529-1
Contract W-7405-eng-48

Descriptors: (*Ion sources, *Deuterium), Atomic beams, Beam injection, Charge exchange, Design, Operation, Thermonuclear devices.

For abstract, see NSA 28 05, number 12001.

LBL-1782/GA PC$3.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.

DESIGN AND OPERATION OF INTENSE NEUTRAL BEAM SOURCES.
W. R. Baker, K. H. Berkner, W. S. Cooper, K. W. Ehlers, and W. B. Kunkel. 18 Apr 73, 5p CONF-730705-2
Contract W-7405-eng-48

Descriptors: (*Ion sources, *Magnetic mirrors), Amp beam currents, Atomic beams, Baseball devices, Beam injection, Design, 2x devices.

For abstract, see NSA 28 05, number 12002.

MATT-Q-27/GA PC$16.75/MF$1.45
Princeton Univ., N. J. Plasma Physics Lab.
ANNUAL REPORT COVERING THE PERIOD JANUARY 1 TO DECEMBER 31, 1969.
Jun 70, 291p
Contract AT(30-1)-1238

Descriptors: (*Stellarators, *Research programs), (*Spherator, Research programs), Plasma instability, Plasma waves.

For abstract, see NSA 28 04, number 09845.

MATT-Trans-110/GA PC$3.50/MF$1.45
Akademiya Nauk Sssr, Moscow. Institut Atomnoi Energii.
ELECTRON RUNAWAY REGIME OF TOKAMAK T-6 DISCHARGES.
V. S. Vlasenkov, V. M. Leonov, V. G. Merezhin, and V. S. Mukhovatov. Apr 73, 26p
Translation of IAE--2205.

Descriptors: (*Tokamak devices, *Runaway electrons), Ionization, Kev range 10-100, Kev range 100-1000, Plasma, Plasma instability.

For abstract, see NSA 28 04, number 09742.

MATT-Trans-111/GA PC$3.25/MF$1.45
Institut Atomnoi Energii, Moscow (Ussr).
ROLE OF RUNAWAY ELECTRONS IN THE DEVELOPMENT OF INSTABILITY IN THE TOKAMAK.
V. V. Alikaev, Y. I. Arsenev, G. A. Bobrovskii, A. A. Kouoratiev, and K. A. Rasumova. Apr 73, 23p
Translation of IAE--2206.

Descriptors: (*Tokamak devices, *Runaway electrons), (*Plasma instability, Runaway electrons), Plasma density, X radiation.

For abstract, see NSA 28 05, number 11992.

NP-19785/GA PC$3.00/MF$1.45
ENERGY THROUGH NUCLEAR FUSION INSTEAD OF THROUGH NUCLEAR FISSION. NEW SYSTEM ALLOWS RAPID PARTICIPATION OF THE ANTICIPATED HIGHLY ECONOMIC NUCLEAR FUSION.
K. Nowak. 4p
In German. U.S. Sales Only.

Descriptors: (*Thermonuclear reactors, *Colliding beams), Electrons, Ion beams.

For abstract, see NSA 28 06, number 14202.

ORNL-TM-4083/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
EFFECT OF FUEL INJECTION ON A CYCLIC BETA -LIMITED RADIATION DOMINATED FUSION REACTOR.
J. F. Etzweiler, J. F. Clarke, and R. H. Fowler. Jun 73, 36p
Contract W-7405-eng-26

Descriptors: (*Tokamak devices, *Beam injection), (*High-beta plasma, *Energy losses), Alpha particles, Fuel pellets, Pulses.

For abstract, see NSA 28 04, number 09743.

ORNL-TM-4120/GA PC$4.25/MF$1.45
Oak Ridge National Lab., Tenn.
RELATIVISTIC ELECTRON PRODUCTION IN THE ORMAK DEVICE.
D. A. Spong, J. F. Clarke, and J. A. Rome. Jun 73, 42p
Contract W-7405-eng-26

Descriptors: (*Ormak devices, *Runaway electrons), Mev range, Relativistic range.

For abstract, see NSA 28 04, number 09846.

ORNL-TM-4184/GA PC$4.75/MF$1.45
Oak Ridge National Lab., Tenn.
OUTLINE OF DIRECT METHODS USED IN COMPUTING THE CROSS SECTION SENSITIVITY OF NEUTRONIC PARAMETERS IN A FUSION REACTOR.
M. L. Tobias, and D. Steiner. Jun 73, 53p
Contract W-7405-eng-26

Descriptors: (*Thermonuclear reactors, *Neutrons), Cross sections, Deuterium, Perturbation theory, Tritium.

For abstract, see NSA 28 04, number 09847.

ORNL-TM-4200/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
CROSS-SECTION SENSITIVITY OF TRITIUM BREEDING IN A FUSION REACTOR BLANKET: EFFECTS OF UNCERTAINTIES IN CROSS SECTIONS OF EXP 6 LI, EXP 7 LI, AND EXP 93 NB.
M. Tobias, and D. Steiner. Jun 73, 36p
Contract W-7405-eng-26

Descriptors: (*Tritium, *Breeding blankets), (*Lithium 6, *Neutron reactions), (*Lithium 7, Neutron reactions), Cross sections, Niobium 93, Thermonuclear reactors.

For abstract, see NSA 28 06, number 14203.

ORNL-TM-4256/GA PC$3.50/MF$1.45
Oak Ridge National Lab., Tenn.
MAGNET SHIELD DESIGN FOR FUSION REACTORS.
J. T. Kriese, and D. Steiner. Jun 73, 28p
Contract W-7405-eng-26

Descriptors: (*Thermonuclear reactors, Shielding), (*Shielding, *Planning), Cost, Deuterium, Magnet coils, One-dimensional calculations, Tritium.

For abstract, see NSA 28 04, number 09848.

PATENT-3 742 219/GA Not available NTIS
Atomic Energy Commission, Washington, D.C.
HIGH ENERGY NEUTRAL PARTICLE BEAM SOURCE.
Patent,
Charles C. Damm, John E. Osher, and Richard F. Post. Filed 23 Jun 71, patented 26 Jun 73, 6p PAT-APPL-155 984
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Ion sources, *Patents), (*Nuclear fusion, Ion beams), Plasma control, Pinch effect.
Identifiers: PAT-CL-250-84.

The invention relates, generally, to apparatus for producing beams of energetic neutral particles and, more particularly, to apparatus for producing energetic neutral particle beams in which there is first produced a plurality of negative ion beams which are then combined and accelerated to provide a high energy negative ion beam. This beam is then passed through a neutralizer cell to produce a beam of energetic neutral particles with greatly improved efficiency.

UCID-16231/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
D-T MIRROR REACTOR FUEL CYCLE NOT REQUIRING A LITHIUM BLANKET.
R. F. Post. 21 Mar 73, 9p
Contract W-7405-eng-48

Descriptors: (*Magnetic mirrors, *Fuel cycle), Breeding blankets, Deuterium, Graphite, Thermonuclear reactors, Tritium.

For abstract, see NSA 28 05, number 11984.

UCRL-74675/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
SIMULATION OF 14-MEV NEUTRON DAMAGE TO POTENTIAL CTR MATERIALS.
R. J. Borg. 29 May 73, 18p CONF-730416-3

Descriptors: (*Vanadium, *Physical radiation effects), (*Niobium, Physical radiation effects), (*Molybdenum, Physical radiation effects), (*Copper, Physical radiation effects), Irradiation, Mev range 10-100, Neutron sources, Neutrons, Planning, Simulators, Thermonuclear reactors.

For abstract, see NSA 28 06, number 14204.

UCRL-74716/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
200 KW NEUTRAL BEAM INJECTION INTO THE 2XII MIRROR DEVICE.
F. H. Coensgen, W. F. Cummins, W. E. Jr. Nexsen, A. W. Molvik, and T. C. Simonen. 23 Apr 73, 6p CONF-730705-6

Descriptors: (*2x devices, *Beam injection), Atomic beams, Deuterium, Energy losses, Hydrogen.

For abstract, see NSA 28 05, number 11950.

WASH-1246/GA PC$3.00/MF$1.45
Ad Hoc Committee on Ctr Technology (Usa).
POST-1980 REACTOR DEVELOPMENT PROGRAM.
30 Jun 72, 12p

Descriptors: (*Thermonuclear reactors, *Planning), Cost, Research programs.

For abstract, see NSA 28 04, number 09850.

18B. Isotopes

ARH-SA-149/GA PC$4.25/MF$1.45
Atlantic Richfield Hanford CO., Richland, Wash.
APPLICATION OF AMBERLITE XE-270 RESIN TO PURIFICATION OF NEPTUNIUM.
W. W. Schulz. May 73, 41p

Descriptors: (*Neptunium, *Purification), Ion exchange materials, Isotope production, Neptunium 237.

For abstract, see NSA 28 04, number 08029.

BNWL-1686/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
TECHNICAL, ECONOMIC, AND POLICY CONSIDERATIONS AFFECTING FUTURE PRODUCTION, MARKETING, AND USE OF CESIUM-137 AND STRONTIUM-90.
R. W. McKee. Dec 72, 347p
Contract AT(45-1)-1830

Descriptors: (*Cesium 137, *Isotope production), (*Strontium 90, Isotope production), Economics, Market, Nuclear fuels, Radiation sources, Reprocessing, Trade, Uses, Waste management.

For abstract, see NSA 28 05, number 10966.

CONF-730618-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
PROCESS EFFICIENCIES IN CALUTRON SEPARATIONS.
L. O. Love. (nd). 17p

Descriptors: (*Electromagnetic isotope separation, *Efficiency), Ornl, Reviews.

For abstract, see NSA 28 04, number 08304.

CONF-730908-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
ISOTOPIC ENRICHMENT OF THE PRODUCT OF A NEUTRON CAPTURE (N, GAMMA) REACTION IN LANTHANIDE AND ACTINIDE EXCHANGED ZEOLITES.
D. O. Campbell. 16p

Descriptors: (*Lanthanum 140, *Isotope production), (*Erbium 171, Isotope production), (*Praseodymium 142, Isotope production), (*Americium 242, Isotope production), Americium 241, Capture, Curium isotopes, Erbium 170, Gamma radiation, Ion exchange, Ion exchange materials, Isotope enriched materials, Lanthanum 139, Neutron beams, Nuclear reactions, Praseodymium 141, Recoils, Zeolites.

For abstract, see NSA 28 05, number 10760.

DP-1269/GA PC$3.00/MF$1.45
Du Pont de Nemours (E.I.) and CO., Aiken, S. C. Savannah River Lab.
ACTINIDE PROPERTIES AND METHODS OF PRODUCTION.
R. G. Baxter. Dec 72, 94p
Contract AT(07-2)-1

Descriptors: (*Actinides, *Isotope production), Capture, Chemical properties, Ion beams, Ion exchange, Neutron beams, Separation processes, Solvent extraction, Thermonuclear explosions.

For abstract, see NSA 28 05, number 10761.

LA-UR-73-641/GA PC$3.50/MF$1.45
Los Alamos Scientific Lab., N. Mex.
MEDICAL AND BIOLOGICAL APPLICATIONS OF STABLE CARBON, NITROGEN, AND OXYGEN ISOTOPES.
B. M. Tolbert, and N. A. Matwiyoff. 22 Mar 73, 27p CONF-730309-8
Contract W-7405-eng-36

Descriptors: (*Carbon isotopes, *Tracer techniques), (*Nitrogen isotopes, Tracer techniques), (*Oxygen isotopes, Tracer techniques), Biology, Labelled compounds, Medicine, Metabolism, Stable isotopes.

For abstract, see NSA 28 04, number 10586.

LA-tr-73-12/GA PC$3.00/MF$1.45
METHOD OF THE ISOTOPE SEPARATION.
K. Guers. 17 Dec 70, 9p
Translation of .

Descriptors: (*Uranium 235, *Isotope separation), (*Uranium 238, Isotope separation), Carbon dioxide, Carbon monoxide, Cyanogen, Excitation, Lasers, Nitrogen oxides, Uranium hexafluoride, Vapor condensation.

For abstract, see NSA 28 04, number 07922.

RFP-2065/GA PC$3.00/MF$1.45
Dow Chemical CO., Golden, Colo. Rocky Flats Div.
POSSIBLE APPLICATIONS OF LASER ISOTOPE SEPARATION TO NUCLEAR AND CONVENTIONAL TECHNOLOGIES.
S. J. Altschuler. 13p CONF-730611-9
Contract AT(29-1)-1106

Descriptors: (*Isotope separation, *Lasers), Economics.

For abstract, see NSA 28 05, number 10964.

18C. Nuclear Explosions

AD-767 662/0GA PC$8.25/MF$1.45
Rand Corp Santa Monica Calif
EFFECTS OF STRONG EXPLOSIONS. VI. (SOVIET LITERATURE TRANSLATIONS),
Simon Kassel. Dec 72, 125p Rept no. R-760/5-ARPA
Contract DAHC15-73-C-0181, ARPA Order-189-1
See also report dated Aug 72, AD-754 087.

Descriptors: (*Nuclear explosions, Abstracts), Explosion effects, Nuclear explosion damage, Hypersonic flow, Heat shields, Plasma sheath, Aerodynamic heating, Lasers, Electric discharges, Exploding wires, Soil mechanics, USSR, Equations of state, Composite materials, Atmosphere entry.
Identifiers: Atmospheric physics, Plasma dynamics, Translations.

The effects of strong explosions, particularly nuclear explosions, and their simulation under laboratory and field conditions involve a very broad range of phenomena and parameters such as high temperatures, pressures, electromagnetic energy densities, interaction of energy with materials, shock waves in gases, liquids, and solids, and, in general, events occurring under conditions of a high degree of mechanical, thermal, and radiation stress. The series of Rand Reports of which this is the sixth to be published covers a variety of the pertinent topics as they are reflected in the currently available Soviet literature, by supplying abstracts from and summaries of the scientific and technological publications of the USSR. Topics discussed include: Shock waves, and explosions in gases; shock waves in solids; shock waves in liquids; interaction of shock waves with solids; high-speed flow past bodies; reentry shielding; atmospheric physics; laser simulation and related effects; exploding wires; electrical discharges; plasma dynamics; equations of state; properties of composite materials; and, soil mechanics.

AD-767 888/1GA PC$4.25/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
A CODE FOR ANALYSIS OF NUCLEAR EFFECTS AND SYSTEMS SURVIVABILITY. VOLUME I. USER'S GUIDE.
Master's thesis,
Harold E. Meisterling. Jun 73, 42p Rept no. GNE/PH/73-3-Vol-1
See also Volume 2, AD-767 889.

Descriptors: (*Defense systems, Threat evaluation), (*Nuclear explosions, Survival), (*Explosion effects, *Programming(Computers)), Neutron flux, Gamma rays, X rays, Vulnerability, Kill probabilities, Instruction manuals, Theses.
Identifiers: FORTRAN, CDC 6600 computers, Systems analysis.

The report contains the description of a computer code which calculates effects due to a nuclear burst, and determines the survivability of up to 100 selected vehicle positions. The effects calculated are those due to X-rays, neutrons, gammas, induced gamma, blast, and thermal. The code accepts as input; the number and spectra of the nuclear bursts; the vulnerability of the vehicles (one type at a time) to the various effects; and the mission profile (initial positions and velocity vectors). The code then computes the level of each effect from each burst at each target position. If any effect level exceeds the vehicle's given vulnerability, that vehicle is assumed to be killed. In the case of blast only a probability of survival may be computed rather than a kill/no kill determination. The code is written in FORTRAN Extended for the CDC 6600 computer located at Wright-Patterson Air Force Base, Ohio. The code requires 290 seconds of computer time for each burst to be analyzed, and a central core of 156000 octal regardless of the number of bursts. The report is divided into five volumes. A user's guide to the code is presented in the report. (Modified author abstract)

AD-767 889/9GA PC$9.75/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
A CODE FOR ANALYSIS OF NUCLEAR EFFECTS AND SYSTEMS SURVIVABILITY. VOLUME II. CODE LISTING.
Master's thesis,
Harold E. Meisterling. Jun 73, 151p Rept no. GNE/PH/73-3-Vol-2
See also Volume 1, AD-767 888 and Volume 4, 767 890.

Descriptors: (*Defense systems, Threat evaluation), (*Nuclear explosions, Survival), (*Explosion effects, *Computer programs), Neutron flux, Gamma rays, X rays, Vulnerability, Kill probabilities, Subroutines, Theses.
Identifiers: FORTRAN, CDC 6600 computers, Systems analysis.

The report contains the description of a computer code which calculates effects due to a nuclear burst, and determines the survivability of up to 100 selected vehicle positions. The effects calculated are those due to X-rays, neutrons, gammas, induced gammas, blast, and thermal. The code accepts as input; the number and spectra of the nuclear bursts; the vulnerability of the vehicles (one type at a time) to the various effects; the mission profile (initial positions and velocity vectors). The code then computes the level of each effect from each burst at each target position. If any effect level exceeds the vehicle's given vulnerability, that vehicle is assumed to be killed. In the case of blast only a probability of survival may be computed rather than a kill/no kill determination. The code is written in FORTRAN Extended for the CDC 6600 computer located at Wright-Patterson Air Force Base, Ohio. The code requires 290 seconds of computer time for each burst to be analyzed, and a central core of 156000 octal regardless of the number of bursts. The report is divided into five volumes. Volume two presents a listing of the code and a brief description of each subroutine. (Modified author abstract)

AD-767 890/7GA PC$5.50/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
A CODE FOR ANALYSIS OF NUCLEAR EFFECTS AND SYSTEMS SURVIVABILITY. VOLUME IV. NEUTRONS AND GAMMAS.
Master's thesis,
Robert D. McLaren, and Harold E. Meisterling. Jun 73, 70p Rept no. GNE/PH/73-3-Vol-4
See also Volume 2, AD-767 889, Volume 1, AD-767 888, and Volume 5, AD-767 894.

Descriptors: (*Defense systems, Threat evaluation), (*Nuclear explosions, Survival), (*Explosion effects, *Programming(Computers)), Neutron flux, Gamma rays, Atmospheric motion, Partial differential equations, Matrix algebra, Numerical analysis, Theses, Mathematical models.
Identifiers: FORTRAN, CDC 6600 computers.

The report contains the description of a computer code which calculates effects due to a nuclear burst, and determines the survivability of up to 100 selected vehicle positions. The effects calculated are those due to X-rays, neutrons, gammas, induced gammas, blast, and thermal. The code accepts as input; the number and spectra of the nuclear bursts; the vulnerability of the vehicles (one type at a time) to the various effects; the mission profile (initial positions and velocity vectors). The code then computes the level of each effect from each burst at each target position. If any ef-

fect level exceeds the vehicle's given vulnerability, that vehicle is assumed to be killed. In the case of blast only a probability of survival may be computed rather than a kill/no kill determination. The code is written in FORTRAN Extended for the CDC 6600 computer located at Wright-Patterson Air Force Base, Ohio. The code requires 290 seconds of computer time for each burst to be analyzed, and a central core of 156000 octal regardless of the number of bursts. This report contains detailed descriptions of the calculation of effects due to neutrons and gammas. (Modified author abstract)

AD-767 894/9GA PC$4.50/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
A CODE FOR ANALYSIS OF NUCLEAR EFFECTS AND SYSTEMS SURVIVABILITY. VOLUME V. X-RAY EFFECTS.
Master's thesis,
Harold E. Meisterling. Jun 73, 49p Rept no. GNE/PH/73-3-Vol-5
See also Volume 1, AD-767 888, Volume 2, AD-767 889, and Volume 4, AD-767 890.

Descriptors: (*Defense systems, Threat evaluation), (*Nuclear explosions, Survival), (*Explosion effects, *Programming(Computers)), X rays, Atmospheric motion, Transport properties, Mathematical models, Theses.
Identifiers: FORTRAN, CDC 6600 computers.

The report contains the description of a computer code which calculates effects due to a nuclear burst, and determines the survivability of up to 100 selected vehicle positions. The effects calculated are those due to X-rays, neutrons, gammas, induced gammas, blast, and thermal. The code accepts as input; the number and spectra of the nuclear bursts; the vulnerability of the vehicles (one type at a time) to the various effects; the mission profile (initial positions and velocity vectors). The code then computes the level of each effect from each burst at each target position. If any effect level exceeds the vehicle's given vulnerability, that vehicle is assumed to be killed. In the case of blast only a probability of survival may be computed rather than a kill/no kill determination. The code is written in FORTRAN Extended for the CDC 6600 computer located at Wright-Patterson Air Force Base, Ohio. The code requires 290 seconds of computer time for each burst to be analyzed, and a central core of 156000 octal regardless of the number of bursts. The report contains detailed descriptions of the calculation of effects due to X rays. (Modified author abstract)

AD-768 176/0GA PC$9.50/MF$1.45
Army Engineer Waterways Experiment Station Vicksburg Miss
EFFECT OF CONSTITUTIVE PROPERTIES OF EARTH MEDIA ON OUTRUNNING GROUND SHOCK FROM LARGE EXPLOSIONS.
Final technical rept. Jan 72-Jun 73,
Paul F. Hadala. Aug 73, 476p Rept no. AEWES-TR-S-73-6
Doctoral thesis.

Descriptors: (*Soils, Seismic waves), (*Nuclear explosions, Detonation waves), (*Shelters, Design), Soil mechanics, Pressure, Shock waves, Airburst, Structural geology, Stresses.
Identifiers: *Hardened installations, Ground motion.

Outrunning ground shock data from the 100- to 10-psi overpressure decade in six large surface high explosive (HE) tests, three from a rock site and three from a glaciated soil site, were analyzed for the effect of gross changes in constitutive properties. Axisymmetric wave propagation code calculations in layered linear and nonlinear (incrementally elastic-plastic) media were performed to determine the effects of introducing nonlinearity, selected material property variations, and the relative importance of airblast and direct induced effects from surface explosions in the overpressure decade of interest.

BNWL-1748/GA PC$4.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
AIR STORAGE PEAKING POWER PLANTS: UTILIZING MODIFIED INDUSTRIAL GAS TURBINES AND CAVITIES CREATED WITH NUCLEAR EXPLOSIVES.
B. C. Fryer. May 73, 40p
Contract AT(45-1)-1830

Descriptors: (*Air, *Storage), (*Cavities, *Nuclear excavation), (*Power plants, *Cost benefit analysis), (*Nuclear explosions, Nuclear excavation), Economics, Electric power, Fossil fuels, Gas turbines, Rocks, Underground explosions.

For abstract, see NSA 28 04, number 08107.

COM-73-11498/5GA Reprint
Colorado School of Mines, Golden. Dept. of Geophysics.
INTERPRETATION OF STRAIN DATA - CANNIKIN NUCLEAR TEST,
P. R. Romig. 1972, 7p NOAA-73082001
Pub. in Bull. of the Seismological Society of America, v62 n6 p1473-1478 Dec 72.

Descriptors: (*Underground Explosions, Earth movements), Nuclear explosions, Rock mechanics, Strain measurement, Geological faults, Aleutian Islands.
Identifiers: CANNIKIN shot, Ground motion.

Immediately following CANNIKIN, strain and tilt steps were recorded at distances of 10 to 1,100 km. At the 10-km stations, the steps were larger than expected and indicated that nonelastic effects existed out to that distance. The "quasi-static" strain step, which may represent elastic response to pressure in the cavity, had two exponential decay constants: 10.6 min during the first 5 min. and 17.7 min after 8-min postshot. A significant assymetry in the strain field, evident from observatories at distances of 15 to 300 km, suggests faulting near ground zero. The fault movement was equivalent to that normally associated with an earthquake of magnitude 6 to 6 1/2, which implies a fault length of 10 to 30 km and a dislocation of 30 to 100cm. The steps recorded at the time of collapse are compatible with a collapse mechanism, thus suggesting that little if any fault movement occurred away from the chimney at that time. (Author)

COM-73-11617/0GA Reprint
Colorado School of Mines, Golden. Dept. of Geophysics.
INTERPRETATION OF STRAIN DATA-CANNIKIN NUCLEAR TEST,
P. R. Romig. 14 Jun 72, 7p NOAA-73082905
Pub. in Bull. of the Seismological Society of America, v62 n6 p1473-1478 Dec 72.

Descriptors: (*Nuclear explosions, Geological faults), Underground explosions, Rock mechanics, Strain measurement, Seismology, Earthquakes.
Identifiers: CANNIKIN shot.

Immediately following CANNIKIN, strain and tilt steps were recorded at distances of 10 to 1,100 km. At the 10-km stations, the steps were larger than expected and indicated that nonelastic effects existed out to that distance. The 'quasi-static' strain step, which may represent elastic response to pressure in the cavity, had two exponential decay constants: 10.6 min during the first 5 min. and 17.7 min after 8-min postshot. A significant assymetry in the strain field, evident from observatories at distances of 15 to 300 km, suggests faulting near ground zero. The fault movement was equivalent to that normally associated with an earthquake of magnitude 6 to 6 1/2, which implies a fault length of 10 to 30 km and a dislocation of 30 to 100 cm. The steps recorded at the time of collapse are compatible with a collapse mechanism, thus suggesting that little if any fault movement occurred away from the chimney at that time. (Author)

COM-73-50812/9GA PC-GPO/MF$1.45-NTIS
National Oceanic and Atmospheric Administration, Boulder, Colo. Earth Sciences Labs.
THE AMCHITKA GEOPIEZOMAGNETIC EXPERIMENT.
Technical rept.,
W. P. Hasbrouck, and J. H. Allen. Apr 73, 41p
NOAA-TR-ERL-266, ESL-29 NOAA-73071902
Paper copy available from GPO $0.65 as C55.13:ERL266-ESL29.

Descriptors: (*Nuclear explosions, Magnetic disturbances), Underground explosions, Nuclear explosion effects, Stresses, Amchitka Island, Piezomagnetism, Data processing, Alaska, Geomagnetism, Strains.
Identifiers: *Cannikin shot.

The Amchitka geopiezomagnetic experiment was designed to detect quasi-static geomagnetic field changes produced by the Cannikin nuclear explosion and to search for magnetic expressions of Aleutian strain-step events. This report describes details of the experiment and the procedures used to reduce and process the data. It was concluded that change of stress apparently can produce permanent changes in the magnetic field. The problem of geopiezomagnetic noise is severe, but one not yet classifiable as intractable. Reasonable suggestions of relationships between magnetic and strain field changes of tectonic origin can be tendered, but not stoutly defended.

LA-UR-73-713/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
EFFECTS OF TURBULENCE ON LOW ALTITUDE FIREBALLS AT LATE TIMES.
H. M. Ruppel, and R. A. Gentry. 17p CONF-730442-4
Contract W-7405-eng-36

Descriptors: (*Nuclear explosions, *Turbulence), Atmospheric explosions, Mathematical models.

For abstract, see NSA 28 05, number 10836.

LA-UR-73-721/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
LATE-TIME PHENOMENOLOGY PREDICTIONS WITH AN ALMOST-LAGRANGIAN CODE.
J. U. Brackbill, C. D. Sutherland, and M. S. Tierney. 20p CONF-730442-2

Descriptors: (*Atmospheric explosions, *Magnetohydrodynamics), Boundary conditions, Computer codes, Diffusion, Geomagnetic field, Nuclear explosions, Two-dimensional calculations.

For abstract, see NSA 28 05, number 11590.

NVO-163(Rev.3)/GA PC$3.00/MF$1.45
Nevada Operations Office (Aec), Las Vegas.
REPORTS AVAILABLE IN THE ALASKAN INFORMATION PROGRAM.
Jan 73, 21p

Descriptors: (*Amchitka island area, *Bibliographies), (*Nuclear explosions, Amchitka island area), Cannikin event, Environment, Milrow event, Underground explosions.

For abstract, see NSA 28 04, number 08109.

NVO-1163-237/GA PC$4.00/MF$1.45
Environmental Research Corp., Las Vegas, Nev.

Group 18C—Nuclear Explosions

TOPOGRAPHIC EFFECTS ON GROUND MOTION FOR INCIDENT P WAVES: A MODEL STUDY.
A. M. Rogers, L. J. Katz, and T. J. Bennett. May 73, 50p
Contract AT(29-2)-1163

Descriptors: (*Nuclear explosions, Ground motion), (*Ground motion, *Topography), Functional models, Seismic effects, Simulation, Underground explosions.

For abstract, see NSA 28 04, number 08111.

NVO-1163-238/GA PC$4.00/MF$1.45
Environmental Research Corp., Las Vegas, Nev.
RAYLEIGH WAVES FROM A NUCLEAR SOURCE IN A HALFSPACE.
J. R. Murphy. May 73, 41p
Contract AT(29-2)-1163

Descriptors: (*Nuclear explosions, *Seismic effects), Buildings, Mathematical models, Seismic detection, Underground explosions.

For abstract, see NSA 28 04, number 08112.

NVO-127/GA PC$9.25/MF$1.45
Nevada Operations Office (Aec), Las Vegas.
AEC PROJECT DIRECTOR'S OPERATIONS PLANS FOR PROJECT RIO BLANCO.
Apr 73, 141p PNE-RB-44

Descriptors: (*Rio blanco event, *Planning), (*Natural gas, *Production), Management.

For abstract, see NSA 28 04, number 08110.

NVO-71/GA PC$15.25/MF$1.45
Nevada Operations Office (Aec), Las Vegas.
PROJECT RULISON: MANAGER'S REPORT.
Apr 73, 262p PNE-R-63

Descriptors: (*Rulison event, *Management), (*Natural gas, *Production), Construction, Engineering, Operation, Planning, Safety.

For abstract, see NSA 28 04, number 08108.

NVO-86(Rev.3)/GA PC$4.00/MF$1.45
Nevada Operations Office (Aec), Las Vegas.
REPORTS AVAILABLE IN PLOWSHARE OPEN FILE.
Jul 73, 44p

Descriptors: (*Gasbuggy event, *Bibliographies), (*Rulison event, Bibliographies), (*Rio blanco event, Bibliographies), (*Wagon wheel event, Bibliographies), Natural gas, Production.

For abstract, see NSA 28 06, number 12828.

PNE-R-41/GA PC$4.25/MF$1.45
Cer Geonuclear Corp., Las Vegas, Nev.
YIELD ESCALATION EVALUATION, PROJECT RULISON.
15 Jun 72, 42p
Contract AT(26-1)-429

Descriptors: (*Rulison event, *Ground motion), Equations, Safety, Seismic effects.

For abstract, see NSA 28 06, number 12829.

PNE-RB-38/GA PC$3.25/MF$1.45
Project Rio Blanco Joint Office of Information (Usa). Cer Geonuclear Corp., Las Vegas, Nev.
PROJECT RIO BLANCO. A GOVERNMENT-INDUSTRY NATURAL GAS PRODUCTION STIMULATION EXPERIMENT USING NUCLEAR EXPLOSIVES.
1 Mar 73, 24p

Descriptors: (*Rio blanco event, *Planning), (*Natural gas, *Production), Environment, Safety.

For abstract, see NSA 28 05, number 10837.

PNE-RB-45/GA PC$4.00/MF$1.45
Nevada Operations Office (Aec), Las Vegas.
PROJECT RIO BLANCO. PROJECT DIRECTORS' PRELIMINARY REPORT; D + 2 DAYS.
21 May 73, 40p

Descriptors: (*Rio blanco event, *Management), (*Natural gas, *Production), Animals, Boreholes, Colorado, Environment, Failures, Ground motion, Inspection, Mechanical effects, Mechanical structures, Mines, Radiation monitoring, Radioactivity, Rocks, Safety, Seismic effects.

For abstract, see NSA 28 04, number 08113.

TID-26320/GA PC$4.00/MF$1.45
Blume (John a.) and Associates, Engineers, Las Vegas, Nev. (Usa).
STATISTICAL CORRELATION OF OBSERVED GROUND MOTION WITH LOW-RISE BUILDING DAMAGE.
R. E. Scholl, and I. Farhoomand. 1973, 39p

Descriptors: (*Rulison event, *Ground motion), (*Buildings, *Seismic effects), Natural gas, Production.

For abstract, see NSA 28 05, number 10838.

UCID-15759/GA PC$6.50/MF$1.45
California Univ., Livermore. Lawrence Radiation Lab.
TRANSIENT GAS FLOW IN A POROUS COLUMN.
F. A. Jr. Morrison. 23 Sep 70, 90p

Descriptors: (*Nuclear explosions, Gas flow), (*Gas flow, *Underground explosions), Adiabatic processes, Isothermal processes, Porosity, Transients.

For abstract, see NSA 28 05, number 10839.

UCRL-51292/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
ACT AND ACTIVE CODES FOR CALCULATING NEUTRON-INDUCED ACTIVATION.
R. M. Lessler, W. E. Alley, and J. B. Green. 10 Apr 73, 16p
Contract W-7405-eng-48

Descriptors: (*Computer codes, *A codes), (*Nuclear explosions, *Nuclear reaction yield), Cdc computers, Neutron reactions, Radioisotopes.

For abstract, see NSA 28 05, number 11905.

UCRL-51352/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
PHYSICS OF SOC AND TENSOR.
J. F. Schatz. 21 Feb 73, 47p
Contract W-7405-eng-48

Descriptors: (*Nuclear explosions, Shock waves), (*Shock waves, *Wave propagation), (*Computer codes, *S codes), Finite difference method, T codes, Underground explosions.

For abstract, see NSA 28 06, number 12833.

UCRL-74688/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
POSSIBLE EFFECT OF NO/SUB X/ INJECTION IN THE STRATOSPHERE DUE TO PAST ATMOSPHERIC NUCLEAR WEAPONS TESTS.
J. S. Chang, and W. H. Duewer. 2 May 73, 12p
CONF-730614-4

Descriptors: (*Atmospheric explosions, Nitrogen oxides), (*Nitrogen oxides, *Abundance), (*Ozone, *Distribution), (*Earth atmosphere, Ozone), Catalysis.

For abstract, see NSA 28 06, number 13547.

UCRL-74530/GA PC$3.25/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
FORMULAS FOR CANISTER AND PIPE DESIGN IN UNDERGROUND NUCLEAR EMPLACEMENT.
A. Blake. 1 Feb 73, 21p CONF-730626-1

Descriptors: (*Nuclear explosives, *Emplacement), (*Containers, *Stress analysis), (*Pipes, Stress analysis), Boreholes, Design, Underground explosions.

For abstract, see NSA 28 06, number 12835.

UCRL-74814/GA PC$5.25/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
ELECTROMAGNETIC PULSE: NUMERICAL METHODS AND APPLICATIONS.
E. K. Miller. 18 Jun 73, 61p

Descriptors: (*Nuclear explosions, Electromagnetic radiation), (*Antennas, Electromagnetic radiation), (*Electromagnetic radiation, *Uses), Atmospheric explosions, Numerical solution, Pulses.

For abstract, see NSA 28 06, number 12836.

18D. Nuclear Instrumentation

AAEC/TM-634/GA PC$3.75/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
GAMMA RAY SPECTRA OF URANIUM AND THORIUM ORES BY HIGH RESOLUTION (GE(LI)) SPECTROMETRY.
D. F. Urquhart. Jan 73, 35p
U.S. Sales Only.

Descriptors: (*Li-drifted ge detectors, *Performance), (*Thorium ores, *Gamma spectroscopy), (*Uranium ores, Gamma spectroscopy), (*Gamma spectrometers, Performance), Energy resolution.

For abstract, see NSA 28 06, number 12929.

AE-472/GA PC$4.75/MF$1.45
Aktiebolaget Atomenergi, Studsvik (Sweden).
AUTOMATIC SAMPLING STATION FOR FISSION GAS ANALYSIS.
S. Sandklef, and P. Svensson. Apr 73, 51p
U.S. Sales Only.

Descriptors: (*Htgr type reactors, *Failed element detection), (*R-2 reactor, *In pile loops), Fission products, Fuel elements, Gamma spectra, Gases, Radiation monitoring, Samplers.

For abstract, see NSA 28 06, number 14352.

ANL/HEP-7314/GA PC$3.00/MF$1.45
Argonne National Lab., Ill.
ARGONNE EFFECTIVE MASS SPECTROMETER.
D. S. Ayres. Apr 73, 4p CONF-730531-1

Descriptors: (*Missing-mass spectrometers, *Operation), Gev range 01-10, Kaons neutral, Linear momentum.

For abstract, see NSA 28 05, number 10933.

BARC-650/GA PC$3.00/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
SILICON (N-TYPE) SURFACE BARRIER DETECTORS.
R. Chaudhry, and K. H. V. Hegde. 1972, 20p
U.S. Sales Only.

Descriptors: (*Surface barrier detectors, *Fabrication), Energy resolution, Gold, Performance, Si semiconductor detectors.

For abstract, see NSA 28 05, number 10908.

BMFT-FBK-73-9/GA PC$5.75/MF$1.45
Siemens a.G., Erlangen (West Germany). Forschungslaboratorien.
NEW SEMICONDUCTORS OUT OF ELEMENTS WITH HIGH ATOMIC NUMBER FOR THE DETECTION OF GAMMA -RAYS AND X-RAYS.
W. R. Willig. Apr 73, 72p
In German. U.S. Sales Only.

Descriptors: (*Semiconductor detectors, *Lead iodides), (*Gamma spectrometers, Semiconductor detectors), (*X-ray spectrometers, Semiconductor detectors), Carrier lifetime, Carrier mobility, Energy resolution, Lead oxides, Mercury iodides.

For abstract, see NSA 28 05, number 10924.

BNL-17873/GA PC$3.25/MF$1.45
Brookhaven National Lab., Upton, N. Y. City Coll., New York.
BNL MULTI-PARTICLE SPECTROMETER.
E. D. Platner, K. J. Foley, M. A. Kramer, W. A. Love, and W. J. Miller. 21p CONF-730531-3

Descriptors: (*Flat magnetic spectrometers, *Design), (*Brookhaven ags, Flat magnetic spectrometers), Accelerator facilities.

For abstract, see NSA 28 05, number 10925.

BNWL-SA-4591/GA PC$3.25/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
APPLICATION OF PULSED NEUTRON SOURCE TECHNIQUES TO PLANT SYSTEMS.
S. R. Bierman, and E. D. Clayton. Jun 73, 22p
CONF-730611-11
Contract AT(45-1)-1830

Descriptors: (*Criticality, *Measuring methods), (*Pulsed neutron techniques, Criticality), Safety.

For abstract, see NSA 28 06, number 13406.

BNWL-SA-4616/GA PC$3.75/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
GAMMA-RAY SPECTRUM ANALYSIS USING A LABORATORY COMPUTER WITH SPECIALIZED HARDWARE AND SOFTWARE.
J. R. Kosorok. 20 Apr 73, 34p CONF-730536-2

Descriptors: (*Gamma spectrometers, *Data processing), Li-drifted ge detectors, Pdp computers, Quantitative chemical analysis, Solid scintillation detectors.

For abstract, see NSA 28 05, number 10926.

CALT-767-P-11-X-5/GA PC$3.00/MF$1.45
California Inst. Of Tech., Pasadena. Dept. Of Electrical Engineering.
STUDY OF DEEP LEVELS IN DETECTOR-GRADE GERMANIUM BY CHARGE TRANSPORT TECHNIQUES. REPORT NO. 6.
V. Marrello, G. Ottaviani, H. Krautle, J. W. Mayer, and M. A. Nicolet. 20 Mar 73, 12p
Contract AT(04-3)-767

Descriptors: (*Ge semiconductor detectors, *Carrier mobility), (*Germanium, Carrier mobility), Electric fields, Holes, Low temperature, Traps, Ultralow temperature, Very low temperature.

For abstract, see NSA 28 05, number 10909.

CEA-N-1578/GA PC$5.75/MF$1.45
Commissariat a l'Energie Atomique, Cadarache (France). Centre d'Etudes Nucleaires.
COMPUTER CODE FOR PROCESSING THE AMPLITUDE HISTOGRAMS WITH GE--LI SEMICONDUCTORS: JONQUES PROGRAM.
J. C. Panisset. Mar 73, 74p
In French. U.S. Sales Only.

Descriptors: (*Radioisotopes, *Radiometric analysis), (*Computer codes, *J codes), (*Gamma spectrometers, *Data processing), Energy resolution, Gamma spectra, Gamma spectroscopy, Li-drifted ge detectors, Peaks, Qualitative chemical analysis, Quantitative chemical analysis.

For abstract, see NSA 28 06, number 12930.

CEA-R-4403/GA PC$7.50/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.
TECHNOLOGY OF ULTRASOUND TRANSDUCERS FOR NUCLEAR ENERGY.
M. Fignon. Jun 73, 107p
In French. U.S. Sales Only.

Descriptors: (*Ultrasonic testing, Transducers), (*Transducers, *Design), Neutrons, Operation, Performance, Physical radiation effects.

For abstract, see NSA 28 05, number 10952.

CONF-730321-1/GA PC$3.00/MF$1.45
Vanderbilt Univ., Nashville, Tenn.
EXPERIENCES WITH SEMICONDUCTORS IN IMAGING AND FUNCTION STUDIES AT VANDERBILT.
J. A. Patton, A. B. Brill, G. Blanco, and R. Highfill. 1973, 20p
Contract AT(40-1)-2401

Descriptors: (*Radioisotope scanners, *Li-drifted ge detectors), Li-drifted si detectors, Operation, Performance.

For abstract, see NSA 28 04, number 08207.

CONF-730627-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
A FAMILY IMAGE FOR EVALUATION OF IMAGE PROCESSING METHODS.
G. D. James, D. A. Ross, W. J. McClain, and P. R. Bell. 1973, 4p

Descriptors: (*Radioisotope scanners, *Data processing), (*Gamma cameras, Data processing), Images.

For abstract, see NSA 28 05, number 10910.

COO-2231-2/GA PC$3.25/MF$1.45
Kent State Univ., Ohio (Usa). Dept. Of Physics.
NEUTRON SPECTROMETRY FROM 1 MEV TO 1 GEV.
R. Madey, and F. M. Waterman. 1972, 25p CONF-721203-12

Descriptors: (*Time-of-flight spectrometers, *Performance), (*Neutron spectrometers, Performance), (*Uclrl cyclotrons, Time-of-flight spectrometers), Accelerator facilities, Efficiency, Energy resolution, Mev range, Neutron sources, Solid scintillation detectors.

For abstract, see NSA 28 05, number 10927.

COO-2232-4/GA PC$3.00/MF$1.45
European Organization for Nuclear Research, Geneva (Switzerland). Columbia Univ., New York. Rockefeller Univ., New York.
LEAD--GLASS CHERENKOV DETECTOR FOR ELECTRONS AND PHOTONS.
J. S. Beale, F. W. Buesser, L. Camilleri, L. Di Lella, and G. Gladding. 1973, 18p CONF-730531-5

Descriptors: (*Cherenkov counters, *Performance), (*Electron detection, Cherenkov counters), (*Gamma detection, Cherenkov counters), Additives, Calibration, Glass, Hadrons, Lead, Operation, Particle discrimination, Radiation detection, Stability.

For abstract, see NSA 28 06, number 12947.

COO-323-30/GA PC$3.25/MF$1.45
Illinois Benedictine Coll., Lisle (Usa). Physical Science Lab.
SPECIAL PROBLEMS IN NUCLEAR INSTRUMENTATION. PROGRESS REPORT, JUNE 1, 1972--MAY 31, 1973.
J. J. Spokas. 30 May 73, 25p
Contract AT(11-1)-323

Descriptors: (*Ionization chambers, *Research programs), Design, Operation, Performance, Tissue-equivalent detectors.

For abstract, see NSA 28 06, number 12913.

FRNC-TH-324/GA PC$5.45/MF$1.45
Paris Univ. (France).
USE OF GEOMETRICAL RELATIONS FOR HPD MEASUREMENTS OF BUBBLE CHAMBER PHOTOGRAPHS.
A. Leguey. 70p
In French. U.S. Sales Only.

Descriptors: (*Flying spot digitizers, *Photographic films), (*Bubble chambers, *Data processing), Computer calculations, Coordinates, Correlations, Filters, Particle tracks, Performance.

For abstract, see NSA 28 04, number 08273.

INS-TH-78/GA PC$4.00/MF$1.45
Tokyo Univ. (Japan). Inst. For Nuclear Study.
ON-LINE DATA PROCESSING SYSTEM FOR WIRE SPARK CHAMBER, 1. READ OUT CONTROL.
S. Inaba, K. Kondo, A. Yamamoto, and N. Sasao. 7 Sep 72, 29p
In Japanese. U.S. Sales Only.

Descriptors: (*Wire spark chambers, *Readout systems), Data processing, Design, Digitizers, On-line systems.

For abstract, see NSA 28 04, number 08208.

IPNO/HE-73-1/GA PC$3.00/MF$1.45
Paris Univ., Orsay (France). Institut de Physique Nucleaire.
TRACK PARAMETRISATION IN THE INHOMOGENEOUS FIELD OF THE SPLIT FIELD MAGNET.
J. J. Aubert, and C. Broll. 1973, 12p
U.S. Sales Only.

Descriptors: (*Multiwire proportional counters, *Data processing), Accelerator facilities, Cern isr, Charged particle detection, Charged particles, Data processing, Gev range, Inhomogeneous fields, Magnetic spectrometers, Trajectories.

For abstract, see NSA 28 06, number 12948.

IRI-132-73-2/GA PC$4.25/MF$1.45
Interuniversitair Reactor Institut, Delft (Netherlands).

DESIGN OF THE ELECTRICAL CIRCUITRY FOR A POSITION SENSITIVE HIGH RESISTANT ANODE WIRE EXP 3 HE NEUTRON DETECTOR.
O. Ciftcioglu. May 73, 42p
U.S. Sales Only.

Descriptors: (*He-3 counters, *Electronic circuits), (*Position sensitive detectors, Electronic circuits), (*Neutron detection, He-3 counters), Readout systems.

For abstract, see NSA 28 04, number 08209.

ITJ-27/GA PC$4.50/MF$1.45
Institute of Nuclear Techniques, Krakow (Poland).
CALIBRATION OF NEUTRON GAUGES FOR MEASURING OF THE SOIL MOISTURE CONTENT IN THE 4 PI GEOMETRY. I. TWO GROUP DIFFUSION THEORY, CASE OF AN EMPTY HOLE.
J. Wozniak. 1973, 49p
U.S. Sales Only.

Descriptors: (*Moisture gages, *Calibration), (*Soils, *Water), (*Computer codes, *T codes), Neutron transport theory, Numerical solution.

For abstract, see NSA 28 06, number 12957.

ITJ-37/GA PC$3.00/MF$1.45
Institute of Nuclear Techniques, Krakow (Poland).
PRECISION OF DIRECT METHODS OF PHOTOPEAK INTEGRATION IN CASES OF SLOPING BACKGROUND.
S. Taczanowski. 1973, 15p
U.S. Sales Only.

Descriptors: (*Spectroscopy, *Spectra unfolding), Background noise, Data processing, Peaks.

For abstract, see NSA 28 06, number 12931.

JAERI-M-4964/GA PC$7.60/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
JAERI-TYPE RADIATION MONITORING INSTRUMENTS.
S. Kinbara, K. Kimura, T. Tsuchiya, T. Kumahara, and S. Inomata. Sep 72, 205p
In Japanese. U.S. Sales Only.

Descriptors: (*Radiation monitors, *Performance), (*Alarm systems, Performance), Electronic circuits, Geiger-mueller counters, Ionization chambers, Logarithmic ratemeters, Maintenance, Power supplies, Preamplifiers, Specifications.

For abstract, see NSA 28 04, number 08210.

JAERI-M-5000/GA PC$5.45/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
SI(LI) DETECTORS AND THEIR APPLICATIONS IN NUCLEAR SPECTROSCOPY.
M. Ishii. Oct 72, 81p
In Japanese. U.S. Sales Only.

Descriptors: (*Spectrometers, Li-drifted si detectors), (*Li-drifted si detectors, *Energy resolution), Fabrication, Uses.

For abstract, see NSA 28 04, number 08262.

JAERI-M-5067/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
INTEGRAL TYPE FITTING ANALYSIS OF GAMMA-RAY SPECTRA FROM SEMICONDUCTOR DETECTORS.
K. Tasaka. Dec 72, 36p
In Japanese. U.S. Sales Only.

Descriptors: (*Semiconductor detectors, *Gamma spectra), (*Gamma spectrometers, *Data processing), Peaks.

For abstract, see NSA 28 04, number 08263.

JINR-E1-6976/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
CHERENKOV TOTAL ABSORPTION SHOWER COUNTER.
G. Adylov, F. Aliev, W. Gajewski, I. Ion, and B. Kulakov. 1973, 11p
U.S. Sales Only.

Descriptors: (*Cherenkov counters, *Performance), (*Electron detection, Cherenkov counters), Electron-meson interactions, Gev range 10-100, Pion beams.

For abstract, see NSA 28 04, number 08274.

JINR-P13-7067/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
NEW PRINCIPLE OF RECORDING THE PARTICLE TRACKS IN LIQUID AND CRYSTALLINE MEDIA.
A. F. Pisarev. 1973, 14p
In Russian. U.S. Sales Only.

Descriptors: (*Radiation detectors, *Crystals), Liquids, Operation, Particle tracks.

For abstract, see NSA 28 05, number 10934.

JINR-P13-7076/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
SIMPLE METHOD (DOUBLE REFLECTION METHOD) OF MEASURING THE AVERAGE PROTON ENERGY ON VAVILOV--CHERENKOV RADIATION.
V. P. Zrelov. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*Cherenkov counters, *Operation), Energy spectra, Proton beams.

For abstract, see NSA 28 04, number 08275.

JUL-914-DE/GA PC$28.50/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Abt. Dekontamination.
CATALOG OF GE(LI)- GAMMA -SPECTRA.
G. Zaddach. Jan 73, 527p
In German. U.S. Sales Only.

Descriptors: Data, Days living radioisotopes, Fission products, Gamma spectra, Gamma spectroscopy, Half-life, Hours living radioisotopes, Li-drifted ge detectors, Minutes living radioisotopes, Tables.

For abstract, see NSA 28 05, number 11863.

LA-UR-73-601/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
EXPANDED FOCAL INTERPRETER FOR REAL-TIME DATA ACQUISITION AND ANALYSIS.
L. V. East. 7p CONF-730536-1
Contract W-7405-eng-36

Descriptors: (*Spectroscopy, Data acquisition systems), (*Data acquisition systems, *Design), Data processing, Pdp computers, Programming languages, Real time systems.

For abstract, see NSA 28 05, number 10928.

LAL-1265/GA PC$5.00/MF$1.45
Paris Univ., Orsay (France). Laboratoire de l'Accelerateur Lineaire.

SEVERAL PROPERTIES OF MULTIWIRE PROPORTIONAL COUNTERS.
J. Boucrot, A. Cordier, H. Nguyen Ngoc, and P. Roudeau. Feb 73, 59p
In French. U.S. Sales Only.

Descriptors: (*Multiwire proportional counters, *Operation), Fabrication, Ionization, Performance, Townsend discharge.

For abstract, see NSA 28 05, number 10935.

LBL-1503/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
STIMULATED EMISSION IN NEON--HELIUM STREAMER CHAMBERS.
A. W. Stetz. Nov 72, 44p
Contract W-7405-eng-48

Descriptors: (*Streamer spark chambers, *Stimulated emission), Helium, Lasers, Mixtures, Neon, Optical systems, Particle tracks, Spatial resolution.

For abstract, see NSA 28 04, number 08276.

LBL-1750/GA PC$3.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
USING HIGH SPEED DIGITAL INTEGRATED CIRCUITS FOR NUCLEAR INSTRUMENTATION.
R. F. Althaus, K. L. Lee, F. A. Kirsten, and L. J. Wagner. May 73, 7p CONF-730531-4
Contract W-7405-eng-48

Descriptors: (*Logic circuits, *Integrated circuits), Digital circuits, Nuclear instrument modules.

For abstract, see NSA 28 05, number 10936.

LBL-1791/GA PC$3.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
HIGH-RESOLUTION LIQUID-FILLED MULTIWIRE CHAMBERS FOR USE IN HIGH-ENERGY BEAMS.
S. E. Derenzo, A. Schwemin, R. G. Smits, H. Zaklad, and L. W. Alvarez. Apr 73, 8p CONF-730531-6
Contract W-7405-eng-48

Descriptors: (*Liquid proportional counters, *Design), (*Multiwire proportional counters, Design), Argon, Krypton, Xenon.

For abstract, see NSA 28 05, number 10937.

LBL-2027/GA PC$4.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
TESTING THE PERFORMANCE OF SCINTILLATION CAMERAS.
H. O. Anger. May 73, 15p
Contract W-7405-eng-48

Descriptors: (*Gamma cameras, *Spatial resolution), Performance testing, Sensitivity, Solid scintillation detectors.

For abstract, see NSA 28 04, number 08213.

LFEN-NL-74/GA PC$5.00/MF$1.45
Junta de Energia Nuclear, Sacavem (Portugal). Laboratorio de Fisica E Engenharia Nucleares.
TIME OF FLIGHT UNIT FOR SLOW NEUTRON SPECTROSCOPY.
A. M. Barros. 1972, 56p
In Portuguese. U.S. Sales Only.

Descriptors: (*Time-of-flight spectrometers, *Design), (*Neutron spectrometers, Design), Thermal neutrons.

For abstract, see NSA 28 04, number 08264.

LYCEN-7282/GA PC$3.25/MF$1.45
Lyon Univ. (France). Institut de Physique Nucleaire.
RESOLUTION OF THE ELECTRONICS OF AN X-RAY SPECTROMETER UNIT HAVING SEMICONDUCTOR DETECTORS.
H. Stroback. 15 Dec 72, 23p
In French. U.S. Sales Only.

Descriptors: (*X-ray spectrometers, *Energy resolution), (*Semiconductor detectors, Energy resolution), Electronic equipment, Noise, Preamplifiers.

For abstract, see NSA 28 04, number 08265.

N-72-25743/GA PC$7.60/MF$1.45
Lockheed Electronics CO., Inc., Houston, Tex. (Usa). Houston Aerospace Systems Div.
SOFT X-RAY ASTRONOMY PROPORTIONAL COUNTER ELECTRONICS.
W. R. Gardner. Dec 71, 176p NASA-CR-115509

Descriptors: (*Multiwire proportional counters, *Design), (*X-ray detection, Multiwire proportional counters), Anticoincidence, Coincidence circuits, Ev range 100-1000, Kev range 01-10, Operation, Pulse discriminators, Rockets.

For abstract, see NSA 28 05, number 10911.

N-72-29469/GA PC$4.00/MF$1.45
Trw Systems, Redondo Beach, Calif.
MULTIWIRE PROPORTIONAL COUNTER DEVELOPMENT. QUARTERLY PROGRESS REPORT.
31 Jan 72, 14p NASA-CR-115732
Contract NAS9-11315

Descriptors: (*Multiwire proportional counters, *Design), Background radiation, Delay circuits, Delta rays, Readout systems, Spatial resolution.

For abstract, see NSA 28 04, number 08277.

N-73-13688/GA PC$5.45/MF$1.45
Johns Hopkins Univ., Silver Spring, MD. Applied Physics Lab.
EFFECT OF FILTERING ON NOISE AND TIMING IN NUCLEAR PARTICLE DETECTION.
S. A. Gary. Oct 70, 72p NASA-CR-129613, AD-730487
Contract N00017-62-C-0604

Descriptors: (*Electric filters, *Performance), (*Si semiconductor detectors, Electric filters), Comparative evaluations, Delay circuits, Electronic circuits, Noise, Timing properties.

For abstract, see NSA 28 04, number 08214.

NP-19789/GA PC$8.50/MF$1.45
Technische Hogeschool, Delft (Netherlands).
SENSITIVITIES OF DIFFERENT TYPES OF CONTINUOUS WAVE NUCLEAR MAGNETIC RESONANCE SPECTROMETERS.
R. A. Wind. 1972, 126p
U.S. Sales Only.

Descriptors: (*Nmr spectrometers, *Sensitivity), Comparative evaluations.

For abstract, see NSA 28 05, number 10959.

N73-29442/3GA PC$3.50/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
A DIRECTIONAL LOW ENERGY GAMMA-RAY DETECTOR.
G. Morfill, and G. F. Pieper. Sep 73, 30p NASA-TM-X-70449, X-600-73-239
Subm-Submitted for Publication.

Descriptors: *Astronomy, *Gamma rays, *Radiation detectors, Collimators, Sensitivity.

For abstract, see STAR 1120

N73-29556/0GA PC$4.00/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
CHARACTERISTICS OF CESIUM IODIDE FOR USE AS A PARTICLE DISCRIMINATOR FOR HIGH ENERGY COSMIC RAYS.
C. J. Crannell, R. J. Kurz, and W. Viechmann. Aug 73, 36p NASA-TM-X-70446, X-661-72-231
Contract NGR-09-050-001
Subm-Submitted for Publication.

Descriptors: *Cesium iodides, *Cosmic rays, *Electrons, *Protons, Bibliographies, Ionization, Sodium, Temperature.

For abstract, see STAR 1120

ORNL-TM-4064/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.
DESCRIPTION OF FACILITY RADIATION ALARM SYSTEM IN SPECIAL MATERIALS MACHINE SHOP, ROLLING MILL, AND SOURCE MATERIALS VAULT AT ORNL.
P. P. Williams. Mar 73, 22p
Contract W-7405-eng-26

Descriptors: (*Gamma detection, *Ionization chambers), (*Neutron detection, *Bf3 counters), Alarm systems, Design, Operation, Radiation monitoring.

For abstract, see NSA 28 04, number 08215.

ORNL-TM-4091/GA PC$6.25/MF$1.45
Oak Ridge National Lab., Tenn.
COMPUTER-CONTROLLED NEUTRON TIME-OF-FLIGHT SPECTROMETER.
S. H. Merriman. Jul 73, 84p
Contract W-7405-eng-26

Descriptors: (*Time-of-flight spectrometers, *Control systems), (*Hfir reactor, Time-of-flight spectrometers), (*Neutron spectrometers, Control systems), Data acquisition systems, Data processing, Inelastic scattering, Neutron reactions, Pdp computers, Programming, Reactor experimental facilities.

For abstract, see NSA 28 05, number 10929.

RD/B/M-2489/GA PC$3.50/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
B.N.L. REACTOR PHYSICS COUNTING LABORATORY.
A. J. Beynon, and F. J. Smallwood. Nov 72, 26p
U.S. Sales Only.

Descriptors: (*Solid scintillation detectors, *Performance), (*Semiconductor detectors, Performance), (*Fission chambers, Performance), (*Bf3 counters, Performance), Activation analysis, Activation detectors, Bnl reactor, Bnl reactor, Data acquisition systems, Gamma radiation, Laboratory equipment, Radiation detectors, Radiation flux, Reactor kinetics, Readout systems.

For abstract, see NSA 28 04, number 08216.

RD/B/N-2572/GA PC$3.25/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
NSDA: A FORTRAN IV PROGRAM FOR UNFOLDING CONTINUOUS PULSE HEIGHT DISTRIBUTIONS.
B. S. J. Davies, A. J. Fraser, D. M. Johnson, and P. B. Woollam. Feb 73, 22p RPC/Sh/P-(73)5
U.S. Sales Only.

Descriptors: (*Solid scintillation detectors, *Spectra unfolding), (*N codes, Spectra unfolding), (*Computer codes, N codes), (*Gamma spectrometers, Spectra unfolding), Distribution, Fortran, Gamma detection, Gamma radiation, Gamma spectra, Height, Peaks, Pulses, Sodium iodides.

For abstract, see NSA 28 04, number 08266.

RD/B/N-2646/GA PC$3.00/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
TELEVISION/STILL CAMERA, WITH COMMON OPTICAL SYSTEM, FOR REACTOR INSPECTION.
G. Hughes, and P. McBane. Mar 73, 18p
U.S. Sales Only.

Descriptors: (*Television, Remote viewing equipment), (*Cameras, *Design), (*Remote viewing equipment, Design), (*Reactor cores, Remote viewing equipment), Inspection, Pfr reactor.

For abstract, see NSA 28 05, number 10960.

SGAE-2131/GA PC$3.00/MF$1.45
Oesterreichische Studiengesellschaft fuer Atomenergie G.M.B.H., Seibersdorf. Elektronikinstitut.
CAMAC: INPUT CHANGE OF STATE REGISTER.
W. Marschik, F. Buschbeck, and W. Attwenger. May 73, 18p
In German. U.S. Sales Only.

Descriptors: (*Counting circuits, *Camac system).

For abstract, see NSA 28 06, number 12967.

SLA-73-5303/GA PC$3.25/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ULTRA-HIGH VACUUM SYSTEM FOR ION-INDUCED CHARACTERISTIC X-RAY ANALYSIS.
W. Beezhold. 1973, 24p CONF-730632-3

Descriptors: (*X-ray fluorescence analyzers, *Design), (*Vacuum systems, X-ray fluorescence analyzers), Ion beams, Li-drifted si detectors, Trace amounts, X-ray fluorescence analysis, X-ray spectrometers.

For abstract, see NSA 28 06, number 12968.

TID-25952-P1/GA PC$7.60/MF$1.45
Argonne National Lab., Ill. Atomic Energy Commission, Washington, D. C.
NUCLEAR POWER REACTOR INSTRUMENTATION SYSTEMS HANDBOOK. VOLUME 1.
J. M. Harrer, and J. G. Beckerley. 1973, 313p
ISBN-0-87079-005-6

Descriptors: (*Power reactors, Reactor instrumentation), (*Reactor instrumentation, *Manuals), Data acquisition systems, Education, In core instruments, Neutron detectors, Radiation detectors, Reactor control systems.

For abstract, see NSA 28 04, number 10208.

UCRL-51369/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
METHOD OF EVALUATING SCANNING EFFICIENCY FOR QUARK-LIKE (PSEUDO) TRACKS IN A FLAT-GEOMETRY CLOUD CHAMBER.
R. D. Ernst. 27 Mar 73, 11p
Contract W-7405-eng-48

Descriptors: (*Cloud chambers, *Particle tracks), (*Quarks, *Radiation detection).

For abstract, see NSA 28 04, number 08278.

UCRL-51371/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
LLL 18-INCH WILSON CLOUD CHAMBERS.
G. Griffin. 23 Apr 73, 12p
Contract W-7405-eng-48

Descriptors: (*Expansion chambers, *Operation), Optical systems, Photography.

For abstract, see NSA 28 05, number 10912.

UCRL-51393/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
NEUTRON DOSIMETRY (14 MEV) FOR FOIL SAMPLES IRRADIATED WITH THE LAWRENCE LIVERMORE LABORATORY ROTATING TARGET NEUTRON SOURCE.
R. A. Van Konynenburg. 17 Apr 73, 15p
Contract W-7405-eng-48

Descriptors: (*Neutron dosimetry, Activation detectors), (*Activation detectors, *Accuracy), Fast neutrons, Niobium.

For abstract, see NSA 28 05, number 10918.

18E. Nuclear Power Plants

BNL-17897/GA PC$5.75/MF$1.45
Brookhaven National Lab., Upton, N. Y.
IMPACT OF NUCLEAR POWER ON THE PUBLIC; THE AMERICAN EXPERIENCE.
V. P. Bond. Jan 73, 73p

Descriptors: (*Electric power, *Environment), (*Nuclear power, Environment), Coal, Cost, Efficiency, Fossil fuels, Nuclear fuels, Nuclear power plants, Petroleum, Safety, Usa.

For abstract, see NSA 28 05, number 12471.

COO-2260-2/GA PC$3.00/MF$1.45
Wisconsin Univ., Madison.
ELECTRICAL POWER GENERATION COMPARATIVE COSTS AND BENEFITS. A ONE-WEEK WORKSHOP FOR HIGH SCHOOL SCIENCE TEACHERS. FINAL REPORT.
M. W. Carbon, and K. T. Hartwig. 28 Feb 73, 17p
Contract AT(11-1)-2260

Descriptors: (*Electric power, *Cost), (*Nuclear power, Cost), Power plants.

For abstract, see NSA 28 05, number 12473.

DOCKET-1151-63/GA PC$3.00/MF$1.45
United Power Association, Elk River, Minn. (Usa).
ELK RIVER REACTOR. STATUS OF DEACTIVATED REACTOR, FEBRUARY 1, 1973--MAY 1, 1973.
6 Jun 73, 16p

Descriptors: (*Err reactor, *Reactor dismantling), Personnel, Pressure vessels, Radiation protection, Reactor licensing, Reactor maintenance, Testing, Thermal shields.

For abstract, see NSA 28 06, number 14858.

DOCKET-50003-173/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. STEAM DRIVEN MOTOR-GENERATOR SET MALFUNCTION.
17 May 73, 2p

Descriptors: (*Indian point-1 reactor, *Electric generators), Control systems, Electric batteries, Failures, Reactor licensing, Turbines, Turbogenerators.

For abstract, see NSA 28 04, number 10222.

DOCKET-50003-174/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. OVER EXPOSURE OF INDIVIDUAL.
9 May 73, 4p

Descriptors: (*Indian point-1 reactor, *Personnel), Man, Radiation doses, Reactor licensing, Reactor maintenance, Reactor safety.

For abstract, see NSA 28 04, number 10223.

DOCKET-50003-175/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. INDEMNITY AGREEMENT B-19, ENDORSEMENT 57.
11 May 73, 2p

Descriptors: (*Indian point-1 reactor, *Nuclear insurance), Liabilities, Reactor accidents, Reactor licensing.

For abstract, see NSA 28 04, number 10224.

DOCKET-50003-176/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. TECHNICAL SPECIFICATIONS, REQUEST FOR CHANGE.
18 May 73, 5p

Descriptors: (*Indian point-1 reactor, *Specifications), Containment, Corrections, Corrosion products, Fission products, Leaks, Monitoring, Primary coolant circuits, Reactor licensing, Reactor operation, Reactor shutdown, Testing.

For abstract, see NSA 28 04, number 10225.

DOCKET-50003-177/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. EMERGENCY CORE COOLING SYSTEM, ADDITIONAL INFORMATION.
1 Jun 73, 8p

Descriptors: (*Indian point-1 reactor, *Eccs), Design, Reactor licensing, Sprays.

For abstract, see NSA 28 04, number 10226.

DOCKET-50003-178/GA PC$6.75/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. PETITION FOR FULL-TERM OPERATING LICENSE, AMENDMENT 5.
15 Jun 73, 95p

Descriptors: (*Indian point-1 reactor, *Reactor licensing), Containment systems, Mechanical structures, Quality assurance.

For abstract, see NSA 28 05, number 12169.

DOCKET-50003-179/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
INDIAN POINT STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 51.
30 May 73, 3p

Descriptors: (*Indian point-1 reactor, *Valves), Blowers, Closures, Containment, Radiations, Radioactivity, Reactor licensing, Reactor operation, Relays, Specifications, Stack disposal, Ventilation.

For abstract, see NSA 28 05, number 12170.

DOCKET-50003-180/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
INDIAN POINT STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 52.
18 May 73, 11p

Descriptors: (*Indian point-1 reactor, *Reactor cores), Configuration, Control elements, Height, Reactor fueling, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12171.

DOCKET-50003-181/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
INDIAN POINT STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 50, AMENDMENT 4.
23 May 73, 13p

Descriptors: (*Indian point-1 reactor, *Reactor operation), Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12172.

DOCKET-50003-182/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
INDIAN POINT STATION, UNIT 1. SAFETY EVALUATION BY THE DIRECTORATE OF LICKNSING.
11 Jun 73, 7p

Descriptors: (*Indian point-1 reactor, *Reactor safety), Containment, Electronic circuits, Pipelines, Reactor accidents, Reactor licensing, Ruptures, Steam.

For abstract, see NSA 28 05, number 12173.

DOCKET-50003-183/GA PC$19.50/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. ENVIRONMENTAL REPORT AND BENEFIT COST ANALYSIS, APPENDICES.
Mar 73, 350p

Descriptors: (*Indian point-1 reactor, *Environment), Cost benefit analysis, Fishes, Monitoring, Planning, Radioactive wastes, Radioactivity, Reactor licensing, Reactor operation, Waste management.

For abstract, see NSA 28 06, number 14859.

DOCKET-50003-184/GA PC$19.25/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. ENVIRONMENTAL REPORT AND BENEFIT--COST ANALYSIS.
Jun 73, 345p

Descriptors: (*Indian point-1 reactor, *Environment), Climates, Cooling, Cooling towers, Cost benefit analysis, Electric power, Fabrication, Fishes, Geography, Heat transfer, Hydrology, Lakes, Meteorology, Nonradioactive wastes, Power transmission, Radiation monitoring, Radioactive wastes, Reactor accidents, Reactor cooling systems, Reactor licensing, Reactor sites, Waste management.

For abstract, see NSA 28 06, number 14860.

DOCKET-50003-185/GA PC$5.25/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT STATION, UNIT 1. PETITION FOR FULL-TERM OPERATING LICENSE, AMENDMENT 6.
13 Jul 73, 64p

Descriptors: (*Indian point-1 reactor, *Reactor operation), Additives, Biological shielding, Boron, Containment, Control elements, Control systems, Corrosion, Defects, Fuels, High pressure, Leak testing, Leaks, Openings, Operation, Prestressed concrete, Pumps, Reactor licensing, Storage.

For abstract, see NSA 28 06, number 14861.

DOCKET-50010-158/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. PLANS FOR A MODIFIED OFF-GAS SYSTEM.
14 May 73, 3p

Descriptors: (*Dresden-1 reactor, *Gaseous wastes), Reactor components, Reactor licensing, Waste disposal.

For abstract, see NSA 28 04, number 10227.

DOCKET-50010-159/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. UNLOADING HEAT EXCHANGER SYSTEM.
8 May 73, 2p

Descriptors: (*Dresden-1 reactor, *Heat exchangers), Cooling, Pumps, Radioactive wastes, Reactor licensing, Reactor shutdown, Waste disposal.

For abstract, see NSA 28 04, number 10228.

DOCKET-50010-160/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 1, 2, AND 3. RESPONSE TO REQUEST FOR OVERDUE ITEMS.
18 May 73, 7p DOCKET-50237-328, DOCKET-50249-224

Descriptors: (*Dresden-1 reactor, *Eccs), (*Dresden-2 reactor, *Quality assurance), (*Dresden-3 reactor, Quality assurance), Reactor licensing, Reactor start-up, Specifications.

For abstract, see NSA 28 04, number 10229.

DOCKET-50010-161/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. REVIEW FOR CONTROL CIRCUIT DEFICIENCIES.
15 May 73, 2p

Descriptors: (*Dresden-1 reactor, *Eccs), Control systems, Defects, Equipment protection devices, Pumps, Reactor cores, Reactor licensing.

For abstract, see NSA 28 04, number 10230.

DOCKET-50010-162/GA PC$10.50/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. PROPOSED CHANGE TO APPENDIX A OF DPR-2.
17 May 73, 170p

Descriptors: (*Dresden-1 reactor, *Specifications), Reactor licensing, Reactor operation, Reactor safety.

For abstract, see NSA 28 04, number 10231.

DOCKET-50010-163/GA PC$6.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. HAZARDS SUMMARY REPORT, PROPOSED MODIFICATION 73-2.
16 May 73, 77p

Descriptors: (*Dresden-1 reactor, *Fuel elements), Quality assurance, Reactor licensing.

For abstract, see NSA 28 05, number 12174.

DOCKET-50010-164/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 1, 2, AND 3. QUAD-CITIES STATION, UNITS 1 AND 2. REPORTING REQUIREMENTS.
1 Dec 72, 2p DOCKET-50237-329, DOCKET-50249-225

Descriptors: (*Dresden-1 reactor, *Specifications), (*Dresden-2 reactor, Specifications), (*Dresden-3 reactor, Specifications), (*Quad cities-1 reactor, Specifications), Quad cities-2 reactor, Reactor licensing.

For abstract, see NSA 28 04, number 10232.

DOCKET-50010-165/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 1, 2, AND 3. QUAD CITIES STATION, UNITS 1 AND 2. VALVE WALL THICKNESS.
24 May 73, 4p DOCKET-50237-330, DOCKET-50249-226

Descriptors: (*Quad cities-1 reactor, *Valves), (*Quad cities-2 reactor, Valves), (*Dresden-1 reactor, Valves), (*Dresden-2 reactor, Valves), Dresden-3 reactor, Reactor licensing, Reactor safety, Thickness, Ultrasonic testing.

For abstract, see NSA 28 04, number 10233.

DOCKET-50010-166/GA PC$3.25/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. SPECIAL REPORT 27, HIGH PRESSURE COOLANT INJECTION SYSTEM, CONCEPTUAL DESIGN FOR DRESDEN UNIT 1.
16 May 73, 23p

Descriptors: (*Dresden-1 reactor, *Eccs), Containment, Coolants, Design, Reactor licensing, Sprays.

For abstract, see NSA 28 04, number 10234.

DOCKET-50010-167/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. EMERGENCY CONDENSER SHELL SIDE WATER TEMPERATURE EXCEEDED MAXIMUM LIMIT.
21 Mar 73, 2p

Descriptors: (*Dresden-1 reactor, *Eccs), Air, Containment, Reactor licensing, Temperature dependence, Water.

For abstract, see NSA 28 04, number 10235.

DOCKET-50010-168/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. VALVE FAILED TO OPEN ON SIGNAL.
5 May 73, 2p

Descriptors: (*Dresden-2 reactor, *Valves), Eccs, Failures, Pumps, Reactor cores, Reactor licensing, Reactor safety, Sprays.

For abstract, see NSA 28 04, number 10236.

DOCKET-50010-169/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. VALVE FAILED TO CLOSE ON SIGNAL.
9 May 73, 2p

Descriptors: (*Dresden-1 reactor, *Valves), Closures, Failures, Primary coolant circuits, Reactor licensing, Steam, Switches.

For abstract, see NSA 28 04, number 10237.

DOCKET-50010-170/GA PC$5.45/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 1 AND 2. SPECIAL REPORT NO. 21, MEASUREMENTS OF RADIOACTIVITY IN PROCESS SYSTEMS OF THE DRESDEN NUCLEAR POWER STATION AND IN THE ENVIRONMENT, JANUARY--FEBRUARY 1971.
Apr 73, 132p DOCKET-50237-335

Descriptors: (*Dresden-1 reactor, *Environment), (*Dresden-2 reactor, Environment), Gamma radiation, Iodine 131, Milk, Monitoring, Radioactive wastes, Radioactivity, Reactor licensing, Stack disposal.

For abstract, see NSA 28 04, number 10238.

DOCKET-50010-171/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 1. DIESEL FIRE PUMP INOPERABLE.
12 Jun 73, 2p

Descriptors: (*Dresden-1 reactor, *Diesel engines), Failures, Fires, Pumps, Reactor licensing, Reactor operation, Valves.

For abstract, see NSA 28 05, number 12175.

DOCKET-50010-172/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
DRESDEN NUCLEAR POWER STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 25. DRESDEN NUCLEAR POWER STATION, UNIT 2. TECHNICAL SPECIFICATIONS, CHANGE 20. DRESDEN NUCLEAR POWER STATION, UNIT 3. TECHNICAL SPECIFICATIONS, CHANGE 11.
14 May 73, 5p DOCKET-50237-342, DOCKET-50249-235

Descriptors: (*Dresden-1 reactor, *Respirators), (*Dresden-2 reactor, Respirators), (*Dresden-3 reactor, Respirators), Gases, Particles, Radiation protection, Reactor licensing, Vapors.

For abstract, see NSA 28 05, number 12176.

DOCKET-50010-174/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 1. SCRAM SETPOINT DRIFT ON CHANNEL 5 HIGH NEUTRON FLUX SENSOR.
18 Jun 73, 2p

Descriptors: (*Dresden-1 reactor, *Neutron detectors), Calibration, Neutron flux, Reactor licensing, Reactor operation, Scram, Sensitivity.

For abstract, see NSA 28 06, number 14862.

DOCKET-50010-175/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 1. LICENSE DPR-2, SECTION J.5.B.2 OF APPENDIX "A," POWER RANGE MONITORING INSTRUMENTATION.
25 Jun 73, 2p

Descriptors: (*Dresden-1 reactor, *Neutron monitors), Calibration, Monitoring, Neutron flux, Power density, Reactor instrumentation, Reactor licensing, Reactor operation, Reactor shutdown.

For abstract, see NSA 28 05, number 12177.

DOCKET-50010-176/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 1. SETPOINT DRIFT PROBLEM ON CHANNEL 5 HIGH NEUTRON FLUX SENSOR.
21 Jun 73, 2p

Descriptors: (*Dresden-1 reactor, *Neutron monitors), Calibration, Neutron flux, Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 05, number 12178.

DOCKET-50016-194/GA PC$3.00/MF$1.45
Power Reactor Development CO., Detroit, Mich.
ENRICO FERMI ATOMIC POWER PLANT, UNIT 1. REPORT FOR JANUARY 1973.
30 May 73, 14p PRDC-EF-113

Descriptors: (*Enrico fermi-1 reactor, *Radiation protection), Reactor dismantling, Reactor licensing, Reactor maintenance, Testing.

For abstract, see NSA 28 04, number 10239.

DOCKET-50016-195/GA PC$3.00/MF$1.45
Power Reactor Development CO., Detroit, Mich.
ENRICO FERMI ATOMIC POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, REQUEST FOR A CHANGE.
14 Jun 73, 7p

Descriptors: (*Enrico fermi-1 reactor, *Reactor dismantling), Reactor licensing, Reactor shutdown, Shielding, Specifications.

For abstract, see NSA 28 05, number 12179.

DOCKET-50016-196/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
ENRICO FERMI ATOMIC POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 38.
31 May 73, 5p

Descriptors: (*Enrico fermi-1 reactor, *Reactor dismantling), Containment, Maintenance, Reactor licensing, Reactor operation, Specifications, Testing.

For abstract, see NSA 28 05, number 12180.

DOCKET-50029-246/GA PC$3.00/MF$1.45
Yankee Atomic Electric CO., Westboro, Mass.
YANKEE NUCLEAR POWER STATION. VALVE WALL THICKNESS.
19 Mar 73, 2p

Descriptors: (*Rowe yankee reactor, *Valves), Reactor licensing, Thickness, Ultrasonic testing.

For abstract, see NSA 28 04, number 10240.

DOCKET-50029-250/GA PC$3.00/MF$1.45
Yankee Atomic Electric CO., Westboro, Mass.
YANKEE NUCLEAR POWER STATION. PROPOSED CHANGE NO. 109.
11 May 73, 8p

Descriptors: (*Rowe yankee reactor, *Electronic circuits), Reactor licensing, Reactor shutdown, Relays, Scram, Switches, Turbines.

For abstract, see NSA 28 05, number 12181.

DOCKET-50029-251/GA PC$3.00/MF$1.45
Yankee Atomic Electric CO., Westboro, Mass.
YANKEE NUCLEAR POWER STATION. REACTOR SCRAM AND TURBINE TRIP MAY 23, 1973.
23 May 73, 3p

Descriptors: (*Rowe yankee reactor, *Steam turbines), Pipelines, Pressure gages, Reactor licensing, Valves.

For abstract, see NSA 28 05, number 12182.

DOCKET-50029-252/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
YANKEE NUCLEAR POWER STATION. INSPECTION REPORT NO. 50-29/73-02.
17 Apr 73, 12p

Descriptors: (*Rowe yankee reactor, *Shrouds), Inspection, Iron-delta, Reactor licensing, Thickness, Valves, Welded joints.

For abstract, see NSA 28 04, number 10241.

DOCKET-50029-253/GA PC$3.00/MF$1.45
Yankee Atomic Electric CO., Rowe, Mass.
YANKEE NUCLEAR POWER STATION. INSPECTION REPORT NO. 50-29/73-02.
31 May 73, 1p

Descriptors: (*Rowe yankee reactor, *Diesel engines), Electric fuses, Electric generators, Failures, Inspection, Reactor licensing.

For abstract, see NSA 28 04, number 10242.

DOCKET-50029-254/GA PC$3.00/MF$1.45
Yankee Atomic Electric CO., Rowe, Mass.
YANKEE NUCLEAR POWER STATION. AO-73-2, ELECTRICAL DISTURBANCE ON TRANSMISSION LINE.
14 May 73, 1p

Descriptors: (*Rowe yankee reactor, *Power transmission), Electric cables, Electric power, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10243.

DOCKET-50029-255/GA PC$3.00/MF$1.45
Yankee Atomic Electric CO., Rowe, Mass.
YANKEE NUCLEAR POWER STATION. AO-73-5, FAILURE OF NO. 1 EMERGENCY DIESEL GENERATOR.
7 Jun 73, 1p

Descriptors: (*Rowe yankee reactor, *Diesel engines), Cooling, Electric fuses, Electric generators, Failures, Reactor cores, Reactor licensing, Testing.

For abstract, see NSA 28 04, number 10244.

DOCKET-50029-256/GA PC$3.00/MF$1.45
Yankee Atomic Electric CO., Westboro, Mass.
YANKEE NUCLEAR POWER STATION. CONTROL ROD SURVEILLANCE TESTING DATA, JUNE 6, 1973.
8 Jun 73, 2p

Descriptors: (*Rowe yankee reactor, *Control elements), Performance testing, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10245.

DOCKET-50029-257/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
YANKEE NUCLEAR POWER STATION. TECHNICAL SPECIFICATIONS, CHANGE 101.
23 May 73, 14p

Descriptors: (*Rowe yankee reactor, *Reactor operation), Electric power, Environment, Liquid wastes, Monitoring, Radioactive wastes, Reactor accidents, Reactor licensing, Reactor maintenance, Reactor shutdown, Solid wastes, Specifications.

For abstract, see NSA 28 05, number 12183.

DOCKET-50029-258/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
YANKEE NUCLEAR POWER STATION. AUTHORIZATION OF INTERIM METHOD AND ADMINISTRATIVE CONTROL FOR OPERATION.
24 May 73, 2p

Descriptors: (*Rowe yankee reactor, *Reactor start-up), Electric power, Management, Personnel, Power transmission, Reactor licensing, Reactor operation, Scram, Turbines.

For abstract, see NSA 28 05, number 12184.

DOCKET-50029-259/GA PC$5.25/MF$1.45
Yankee Atomic Electric CO., Rowe, Mass.
YANKEE NUCLEAR POWER STATION. REPORT ON EFFECTS OF PIPING SYSTEM BREAK OUTSIDE CONTAINMENT.
Jul 73, 63p

Descriptors: (*Rowe yankee reactor, *Reactor safety), Containment, Diagrams, Environment, Motion, Pipelines, Pipes, Reactor accidents, Reactor licensing, Ruptures.

For abstract, see NSA 28 06, number 14863.

DOCKET-50133-119/GA PC$3.00/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
HUMBOLDT BAY POWER PLANT, UNIT 3. TECHNICAL SPECIFICATIONS, PROPOSED CHANGE NO. 46.
17 May 73, 19p

Descriptors: (*Humboldt bay reactor, *Fuel assemblies), Reactor fueling, Reactor licensing, Specifications.

For abstract, see NSA 28 04, number 10246.

DOCKET-50133-120/GA PC$3.00/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
HUMBOLDT BAY POWER PLANT, UNIT 3. NELIA POLICY NO. NF-113, ENDORSEMENT NO. 61.
16 May 73, 2p

Descriptors: (*Humboldt bay reactor, *Nuclear insurance), Liabilities, Reactor licensing.

For abstract, see NSA 28 05, number 12185.

DOCKET-50133-121/GA PC$3.75/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
HUMBOLDT BAY POWER PLANT, UNIT 3. STEPS TAKEN TO CORRECT ITEMS BROUGHT TO ATTENTION FOLLOWING INSPECTION OF DECEMBER 4--7 AND 18, 1972.
29 May 73, 33p

Descriptors: (*Humboldt bay reactor, *Reactor operation), Corrections, Inspection, Radiation protection, Reactor cores, Reactor licensing, Reactor safety, Regulations, Sprays, Stack disposal, Us aec, Valves.

For abstract, see NSA 28 04, number 10247.

DOCKET-50133-122/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Washington, D.C.
HUMBOLDT BAY POWER PLANT, UNIT 3. MATERIAL STATUS REPORT RETURNED FOR PROPER SIGNATURE.
29 Mar 73, 1p

Descriptors: (*Humboldt bay reactor, *Reactor materials), Reactor licensing.

For abstract, see NSA 28 04, number 10248.

DOCKET-50133-123/GA PC$3.00/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
HUMBOLDT BAY POWER PLANT, UNIT 3. FAILURE OF CLEANUP PUMP MOTOR.
18 Jun 73, 2p

Descriptors: (*Humboldt bay reactor, *Electric motors), Demineralizers, Failures, Pumps, Reactor licensing, Scram, Seals, Steam, Valves, Ventilation.

For abstract, see NSA 28 06, number 14864.

DOCKET-50155-156/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
BIG ROCK POINT PLANT. AO-10-73, EXCESSIVE PUMP SHAFT PACKING LEAKAGE.
18 May 73, 2p

Descriptors: (*Big rock point reactor, *Pumps), Failures, Reactor licensing, Seals.

For abstract, see NSA 28 04, number 10249.

DOCKET-50155-157/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
BIG ROCK POINT PLANT. AO-3 THRU 8-73, SIX ABNORMAL OCCURRENCES.
8 May 73, 4p

Descriptors: (*Big rock point reactor, *Reactor operation), Eccs, Operation, Reactor fueling, Reactor licensing, Reactor safety, Scram, Specifications, Switches, Testing, Valves.

For abstract, see NSA 28 04, number 10250.

DOCKET-50155-158/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
BIG ROCK POINT NUCLEAR PLANT. VALVE WALL THICKNESS VERIFICATION PROGRAM.
12 Jun 73, 2p

Descriptors: (*Big rock point reactor, *Valves), Reactor licensing, Specifications, Thickness.

For abstract, see NSA 28 06, number 14865.

DOCKET-50155-159/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
BIG ROCK POINT NUCLEAR PLANT. TECHNICAL SPECIFICATIONS, REQUEST FOR CHANGE 38.
15 Jun 73, 6p

Descriptors: (*Big rock point reactor, *Personnel), Inspection, Reactor licensing, Reactor operation, Specifications, Testing, Valves.

For abstract, see NSA 28 06, number 14866.

DOCKET-50155-160/GA PC$5.75/MF$1.45
Consumers Power CO., Jackson, Mich.
BIG ROCK POINT NUCLEAR PLANT. TECHNICAL SPECIFICATIONS, REQUEST FOR CHANGE NO. 39.
29 Jun 73, 71p

Descriptors: (*Big rock point reactor, *Specifications), Containment, Inspection, Leaks, Pipelines, Pipes, Reactor licensing, Ruptures, Steam.

For abstract, see NSA 28 06, number 14867.

DOCKET-50171-123/GA PC$8.50/MF$1.45
Philadelphia Electric CO., PA.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 1. AN EVALUATION OF PIPE BREAKS OUTSIDE CONTAINMENT.
May 73, 130p

Descriptors: (*Peach bottom-1 reactor, *Pipelines), Containment shells, Failures, Reactor accidents, Reactor licensing.

For abstract, see NSA 28 04, number 10251.

DOCKET-50171-124/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 17.
3 May 73, 2p

Descriptors: (*Peach bottom-1 reactor, *Inspection), Reactor operation, Steam generators, Valves.

For abstract, see NSA 28 05, number 12186.

DOCKET-50171-125/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 1. INSPECTION REPORT NO. 50-171/73-01.
16 May 73, 15p

Descriptors: (*Peach bottom-1 reactor, *Inspection), Calibration, Design, Diagrams, Failures, Helium, Hydrocarbons, Impurities, Moisture gages, Monitoring, Personnel, Reactor control systems, Reactor licensing, Reactor maintenance, Relays, Scram, Specifications, Spent fuel storage, Steam generators, Testing, Valves.

For abstract, see NSA 28 05, number 12187.

DOCKET-50206-201/GA PC$3.00/MF$1.45
Southern California Edison CO., Rosemead, Calif.
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1. CYCLE 3 FUEL DENSIFICATION REPORT.
15 May 73, 2p

Descriptors: (*San onofre-1 reactor, *Fuel densification), Fuel cans, Fuel rods, Peaks, Reactor licensing, Temperature measurement.

For abstract, see NSA 28 04, number 10252.

DOCKET-50206-202/GA PC$4.50/MF$1.45
Southern California Edison CO., Rosemead, Calif.
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1. FINAL SAFETY ANALYSIS, AMENDMENT 29.
9 May 73, 47p

Descriptors: (*San onofre-1 reactor, *Quality assurance), Reactor licensing, Reactor safety.

For abstract, see NSA 28 04, number 10253.

DOCKET-50206-203/GA PC$3.00/MF$1.45
Department of Transportation, Washington, D.C.
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DEPARTMENT OF TRANSPORTATION, U. S. COAST GUARD.
30 May 73, 1p

Descriptors: (*San onofre-1 reactor, *Environment), Reactor licensing.

For abstract, see NSA 28 05, number 12188.

DOCKET-50206-204/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 9.
5 Jun 73, 13p

Descriptors: (*San onofre-1 reactor, *Reactor operation), Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12189.

DOCKET-50206-205/GA PC$3.00/MF$1.45
Southern California Edison CO., Rosemead, Calif.
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1. TECHNICAL SPECIFICATIONS, PROPOSED CHANGES 20 AND 21.
15 Jun 73, 17p

Descriptors: (*San onofre-1 reactor, *Reactor control systems), Reactor fueling, Reactor licensing, Specifications.

For abstract, see NSA 28 06, number 14868.

DOCKET-50206-206/GA PC$9.50/MF$1.45
Southern California Edison CO., Rosemead, Calif.
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1. TECHNICAL SPECIFICATIONS, PROPOSED CHANGES 17, 18, AND 19.
15 Jun 73, 150p WCAP-2834(R1)

Descriptors: (*San onofre-1 reactor, *Pressure vessels), Inspection, Reactor control systems, Reactor cooling systems, Specifications.

For abstract, see NSA 28 06, number 14869.

DOCKET-50206-207/GA PC$5.00/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA.
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1. DESCRIPTION AND SAFETY ANALYSIS INCLUDING FUEL DENSIFICATION.
May 73, 60p WCAP-8131

Descriptors: (*San onofre-1 reactor, *Fuel densification), Fuel cycle, Reactor licensing, Reactor safety.

For abstract, see NSA 28 06, number 14870.

DOCKET-50213-192/GA PC$3.00/MF$1.45
Department of Transportation, Washington, D.C.
HADDAM NECK PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL RAILROAD ADMINISTRATION.
8 May 73, 2p

Descriptors: (*Connecticut yankee reactor, *Environment), Connecticut, Radioactive waste disposal, Reactor licensing, Rivers, Thermal pollution, Transport.

For abstract, see NSA 28 04, number 10254.

DOCKET-50213-193/GA PC$3.00/MF$1.45
Connecticut Yankee Atomic Power CO., Hartford.
HADDAM NECK PLANT, UNIT 1. ENVIRONMENTAL REPORT, ADDENDA 7.
14 May 73, 4p

Descriptors: (*Connecticut yankee reactor, *Waste heat), Environment, Reactor licensing, Thermal pollution, Water pollution.

For abstract, see NSA 28 04, number 10255.

DOCKET-50213-194/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
HADDAM NECK PLANT, UNIT 1. COOPERATIVE PROGRAM OF MONITORING BETWEEN STATE OF CONNECTICUT AND ATOMIC ENERGY COMMISSION.
27 Feb 73, 2p

Descriptors: (*Connecticut yankee reactor, *Radiation monitoring), Connecticut, Environment, Radioactive wastes, Reactor licensing, Us aec.

For abstract, see NSA 28 05, number 12190.

DOCKET-50213-195/GA PC$3.50/MF$1.45
Connecticut Yankee Atomic Power CO., Hartford.
HADDAM NECK PLANT, UNIT 1. ENVIRONMENTAL REPORT, ADDENDA 6.
18 May 73, 26p

Descriptors: (*Connecticut yankee reactor, *Environment), Aquatic ecosystems, Hydrology, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10256.

DOCKET-50213-196/GA PC$3.00/MF$1.45
Connecticut Yankee Atomic Power CO., Hartford.
HADDAM NECK PLANT, UNIT 1. QUALITY ASSURANCE PROGRAM.
7 May 73, 18p

Descriptors: (*Connecticut yankee reactor, *Quality assurance), Design, Quality control, Reactor licensing, Reactor safety, Specifications.

For abstract, see NSA 28 04, number 10257.

DOCKET-50213-197/GA PC$3.00/MF$1.45
Advisory Council on Historic Preservation, Washington, D.C. (Usa).
HADDAM NECK PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ADVISORY COUNCIL ON HISTORIC PRESERVATION.
23 May 73, 1p

Descriptors: (*Connecticut yankee reactor, *Environment), Reactor licensing.

For abstract, see NSA 28 04, number 10258.

DOCKET-50213-198/GA PC$3.00/MF$1.45
Department of Commerce, Washington, D.C.
HADDAM NECK PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF THE DEPARTMENT OF COMMERCE.
22 May 73, 3p

Descriptors: (*Connecticut yankee reactor, *Environment), Ecology, Ecosystems, Gaseous wastes, Herbicides, Monitoring, Radioactive wastes, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10259.

DOCKET-50213-199/GA PC$3.00/MF$1.45
Connecticut Yankee Atomic Power CO., Haddam.
HADDAM NECK PLANT, UNIT 1. OPERATION REPORT NO. 73-4 FOR THE MONTH OF APRIL.
29 May 73, 14p NYO-3144-83

Descriptors: (*Connecticut yankee reactor, *Reactor operation), Electric power, Reactor licensing, Testing, Turbines, Valves.

For abstract, see NSA 28 04, number 10260.

DOCKET-50213-200/GA PC$3.00/MF$1.45
Connecticut Yankee Atomic Power CO., East Hampton (Usa).
HADDAM NECK PLANT, UNIT 1. LETDOWN ISOLATION TRIP VALVE WOULDN'T CLOSE.
4 Jun 72, 1p

Descriptors: (*Connecticut yankee reactor, *Valves), Containment systems, Equipment protection devices, Failures, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10261.

DOCKET-50213-201/GA PC$3.00/MF$1.45
Connecticut Yankee Atomic Power CO., Hartford.
HADDAM NECK PLANT, UNIT 1. PLANT MODIFICATIONS TO PROTECT FROM FLOODING.
30 May 73, 2p

Descriptors: (*Connecticut yankee reactor, *Equipment protection devices), Configuration, Floods, Performance, Reactor licensing, Safety engineering.

For abstract, see NSA 28 04, number 10262.

DOCKET-50213-202/GA PC$3.00/MF$1.45
Federal Power Commission, Washington, D.C. Bureau of Power.
HADDAM NECK PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL POWER COMMISSION.
11 Jun 72, 3p

Descriptors: (*Connecticut yankee reactor, *Environment), Electric power, Power transmission, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12191.

DOCKET-50213-203/GA PC$3.00/MF$1.45
Department of Agriculture, Washington, D.C.
HADDAM NECK PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF SOIL CONSERVATION SERVICE AND FOREST SERVICE.
11 May 73, 4p

Descriptors: (*Connecticut yankee reactor, *Environment), Erosion, Forests, Reactor licensing, Reactor sites, Rivers, Shores, Soils, Terrestrial ecosystems, Trees.

For abstract, see NSA 28 04, number 10263.

DOCKET-50213-204/GA PC$3.00/MF$1.45
Connecticut Yankee Atomic Power CO., Hartford.
HADDAM NECK PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, PROPOSED CHANGES.
29 Mar 73, 1p

Descriptors: (*Connecticut yankee reactor, *Specifications), Nondestructive testing, Reactor licensing, Welded joints, Welding.

For abstract, see NSA 28 04, number 10264.

DOCKET-50213-205/GA PC$13.75/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
HADDAM NECK PLANT. DRAFT ENVIRONMENTAL STATEMENT.
Mar 73, 232p

Descriptors: (*Connecticut yankee reactor, *Environment), Cost benefit analysis, Electric power, Fabrication, Monitoring, Reactor accidents, Reactor licensing, Reactor sites.

For abstract, see NSA 28 05, number 12192.

DOCKET-50213-206/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
HADDAM NECK PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 21.
14 Jun 73, 13p

Descriptors: (*Connecticut yankee reactor, *Reactor operation), Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12193.

DOCKET-50213-207/GA PC$8.50/MF$1.45
Connecticut Yankee Atomic Power CO., Haddam.
HADDAM NECK PLANT, UNIT 1. AMENDMENT 16 TO LICENSE APPLICATION, PART A, TECHNICAL SPECIFICATIONS.
3 Apr 67, 127p

Descriptors: (*Connecticut yankee reactor, *Reactor operation), Containment, Documentation, Eccs, Equipment protection devices, Gaseous wastes, Heat transfer, Inspection, Leaks, Liquid wastes, Management, Pressure vessels, Pressurizers, Pumps, Pumps, Radioactive wastes, Reactivity, Reactor accidents, Reactor components, Reactor cooling systems, Reactor cores, Reactor fueling, Reactor instrumentation, Reactor licensing, Reactor safety, Reactor sites, Specifications, Steam generators, Testing, Turbines, Valves.

For abstract, see NSA 28 06, number 14872.

DOCKET-50213-208/GA PC$3.00/MF$1.45
Connecticut Yankee Atomic Power CO., East Hampton (Usa).
HADDAM NECK PLANT, UNIT 1. MALFUNCTION OF A REACTOR CONTAINMENT ISOLATION TRIP VALVE.
9 Jun 73, 2p

Descriptors: (*Connecticut yankee reactor, *Valves), Boric acid, Containment, Coolants, Deposits, Failures, Fission products, Reactor licensing, Testing.

For abstract, see NSA 28 06, number 14871.

DOCKET-50213-209/GA PC$3.00/MF$1.45
Connecticut Yankee Atomic Power CO., Hartford.
HADDAM NECK PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF UNITED STATES DEPARTMENT OF THE INTERIOR.
19 Jun 73, 6p

Descriptors: (*Connecticut yankee reactor, *Environment), Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12194.

DOCKET-50219-258/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N.J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE REQUEST 14.
23 Apr 73, 4p

Descriptors: (*Oyster creek-1 reactor, *Reactor fueling), Reactor licensing, Safety engineering.

For abstract, see NSA 28 04, number 10265.

DOCKET-50219-260/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N.J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. FACILITY CHANGE REQUEST NO. 4, SUPPLEMENT 4.
22 May 73, 3p

Descriptors: (*Oyster creek-1 reactor, *Reactivity), Control elements, Reactor kinetics, Reactor licensing, Reactor shutdown.

For abstract, see NSA 28 04, number 10266.

DOCKET-50219-261/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N.J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. REQUEST FOR AUTHORIZATION TO OPERATE AT LOW POWER WITH REACTOR HEAD REMOVED.
15 May 73, 1p

Descriptors: (*Oyster creek-1 reactor, *Reactor operation), Closures, Power, Reactor licensing.

For abstract, see NSA 28 04, number 10267.

DOCKET-50219-263/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. FAILURE OF TORUS TO REACTOR BUILDING VACUUM RELIEF VALVE V-26-18.
15 May 73, 2p

Descriptors: (*Oyster creek-1 reactor, *Valves), Failures, Leaks, Reactor licensing.

For abstract, see NSA 28 04, number 10268.

DOCKET-50219-264/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE REQUEST NO. 15.
10 May 73, 7p

Descriptors: (*Oyster creek-1 reactor, *Critical heat flux), Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 04, number 10269.

DOCKET-50219-265/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. STEPS TAKEN TO CORRECT VIOLATIONS BROUGHT TO ATTENTION FOLLOWING INSPECTION ON MARCH 13, 1973.
16 Apr 73, 18p

Descriptors: (*Oyster creek-1 reactor, *Reactor operation), Corrections, Inspection, Personnel, Pumps, Reactor licensing, Regulations, Stack disposal, Standards, Transients, Us aec.

For abstract, see NSA 28 04, number 10270.

DOCKET-50219-266/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. FAILURE OF LIQUID POISON PUMP, NPO1A.
30 May 73, 2p

Descriptors: (*Oyster creek-1 reactor, *Pumps), Control systems, Electric fuses, Failures, Fluid poison control, Logic circuits, Reactor fueling, Reactor licensing.

For abstract, see NSA 28 04, number 10271.

DOCKET-50219-267/GA PC$4.75/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. MODIFICATION TO RADIOACTIVE WASTE FACILITY.
1 Jun 73, 52p

Descriptors: (*Oyster creek-1 reactor, *Radioactive waste disposal), Configuration, Environment, Radioactive wastes, Reactor licensing.

For abstract, see NSA 28 04, number 10272.

DOCKET-50219-268/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. MAIN STEAM ISOLATION VALVE.
5 Jun 73, 1p

Descriptors: (*Oyster creek-1 reactor, *Valves), Failures, Leaks, Reactor licensing, Steam.

For abstract, see NSA 28 05, number 12195.

DOCKET-50219-269/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. DRYWELL HEAD MANHOLE COVER.
5 Jun 73, 2p

Descriptors: (*Oyster creek-1 reactor, *Gaskets), Closures, Containment buildings, Leaks, Reactor licensing, Seals.

For abstract, see NSA 28 05, number 12196.

DOCKET-50219-270/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 14.
22 May 73, 11p

Descriptors: (*Oyster creek-1 reactor, *Reactor operation), Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12197.

DOCKET-50219-271/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 15.
25 May 73, 16p

Descriptors: (*Oyster creek-1 reactor, *Reactor operation), Control elements, Fuel densification, Heat transfer, Loss of coolant, Power density, Reactor accidents, Reactor cores, Reactor safety, Specifications.

For abstract, see NSA 28 05, number 12198.

DOCKET-50219-272/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. FAILURE OF DIESEL GENERATOR TO ASSUME LOAD; SAMPLE OF REACTOR COOLANT WAS NOT ANALYZED; FAILURE OF CONTAINMENT SPRAY SYSTEM TO RESET AUTOMATICALLY.
18 Jun 73, 6p

Descriptors: (*Oyster creek-1 reactor, *Containment spray systems), Automation, Calibration, Coolants, Diesel engines, Electric generators, Failures, Fires, Reactor cooling systems, Reactor licensing, Relays, Sampling, Water.

For abstract, see NSA 28 06, number 14873.

DOCKET-50219-273/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N. J.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. ELECTROMATIC RELIEF VALVE FAILURE.
22 Jun 73, 2p

Descriptors: (*Oyster creek-1 reactor, *Valves), Failures, Reactor licensing, Reactor operation, Repair, Soldered joints, Testing, Welding.

For abstract, see NSA 28 06, number 14874.

DOCKET-50219-274/GA PC$13.75/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
OYSTER CREEK NUCLEAR POWER PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT.
1972, 235p

Descriptors: (*Oyster creek-1 reactor, *Environment), Aquatic ecosystems, Coolants, Cooling towers, Cost benefit analysis, Crustaceans, Erosion, Fishes, Forests, Reactor licensing, Reactor operation, Terrestrial ecosystems, Thermal pollution, Waste disposal, Waste heat.

For abstract, see NSA 28 06, number 14875.

DOCKET-50220-137/GA PC$4.00/MF$1.45
Niagara Mohawk Power Corp., Syracuse, N. Y.
NINE MILE POINT NUCLEAR STATION, UNIT 1. STATE WATER DISCHARGE PERMIT.
10 May 73, 22p

Descriptors: (*Nine mile point-1 reactor, *Waste disposal), Lakes, Licenses, Liquid wastes, Reactor licensing.

For abstract, see NSA 28 04, number 10273.

DOCKET-50220-138/GA PC$3.00/MF$1.45
Niagara Mohawk Power Corp., Lycoming, N.Y.
NINE MILE POINT NUCLEAR STATION, UNIT 1. CRACKS DISCOVERED IN REACTOR STEAM DRYER ASSEMBLY.
7 May 73, 1p

Descriptors: (*Nine mile point-1 reactor, *Steam separators), Cracks, Drying, Reactor licensing, Steam.

For abstract, see NSA 28 04, number 10274.

DOCKET-50220-139/GA PC$3.00/MF$1.45
Niagara Mohawk Power Corp., Syracuse, N. Y.
NINE MILE POINT NUCLEAR STATION, UNIT 1. PROPOSED CASK DROP PROTECTION SYSTEM, ADDITIONAL INFORMATION.
31 May 73, 20p

Descriptors: (*Nine mile point-1 reactor, *Spent fuel elements), Casks, Design, Reactor licensing, Safety.

For abstract, see NSA 28 04, number 10275.

DOCKET-50220-140/GA PC$3.50/MF$1.45
Niagara Mohawk Power Corp., Syracuse, N. Y.
NINE MILE POINT NUCLEAR STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE REQUEST.
7 Jun 73, 28p

Descriptors: (*Nine mile point-1 reactor, *Specifications), Buildings, Management, Neutron flux, Personnel, Reactor cores, Reactor licensing, Reactor safety, Valves.

For abstract, see NSA 28 05, number 12199.

DOCKET-50220-141/GA PC$3.00/MF$1.45
Niagara Mohawk Power Corp., Syracuse, N. Y.
NINE MILE POINT NUCLEAR STATION, UNIT 1. ENVIRONMENTAL REPORT, SUPPLEMENT 3.
25 May 73, 7p

Descriptors: (*Nine mile point-1 reactor, *Radioactive waste disposal), Cost, Environment, Fuels, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12200.

DOCKET-50220-142/GA PC$3.00/MF$1.45
Niagara Mohawk Power Corp., Lycoming, N.Y.

NINE MILE POINT NUCLEAR STATION, UNIT 1. LEAKAGE OF MAIN STEAM ISOLATION VALVES.
6 Jun 73, 2p

Descriptors: (*Nine mile point-1 reactor, *Valves), Leak testing, Performance, Reactor licensing, Steam.

For abstract, see NSA 28 04, number 10276.

DOCKET-50220-143/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
NINE MILE POINT NUCLEAR STATION, UNIT 1. PROVISIONAL OPERATING LICENSE, AMENDMENT 3.
12 Jun 73, 5p

Descriptors: (*Nine mile point-1 reactor, *Reactor operation), Reactor licensing.

For abstract, see NSA 28 05, number 12201.

DOCKET-50220-144/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
NINE MILE POINT NUCLEAR STATION, UNIT 1. PROPOSED OFF-GAS SYSTEM ACCEPTABLE.
3 May 73, 1p

Descriptors: (*Nine mile point-1 reactor, *Radioactive waste disposal), Gaseous wastes, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12202.

DOCKET-50220-145/GA PC$11.75/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
NINE MILE POINT NUCLEAR STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT.
Jul 73, 192p

Descriptors: (*Nine mile point-1 reactor, *Environment), Aquatic ecosystems, Cooling towers, Cost benefit analysis, Electric power, Fossil fuels, Lakes, Monitoring, Nonradioactive wastes, Power transmission, Radiation doses, Reactor licensing, Reactor operation, Reactor shutdown, Thermal pollution.

For abstract, see NSA 28 06, number 14876.

DOCKET-50231-133/GA PC$3.00/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
SOUTHWEST EXPERIMENTAL FAST OXIDE REACTOR. QUARTERLY ENVIRONMENTAL AND FACILITY RADIATION SURVEY.
Jun 73, 4p

Descriptors: (*Sefor reactor, *Environment), Radiation monitoring, Reactor dismantling, Reactor licensing.

For abstract, see NSA 28 06, number 14877.

DOCKET-50237-327/GA PC$3.25/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3. SPECIAL REPORT NO. 25, ROD DROP ACCIDENT ANALYSIS. QUAD-CITIES STATION, UNITS 1 AND 2. SPECIAL REPORT NO. 9, ROD DROP ACCIDENT ANALYSIS.
May 73, 25p DOCKET-50249-219, DOCKET-50254-194

Descriptors: (*Dresden-2 reactor, *Rod drop accidents), (*Dresden-3 reactor, Rod drop accidents), (*Quad cities-1 reactor, Rod drop accidents), (*Quad cities-2 reactor, Rod drop accidents), Reactor licensing, Reactor safety.

For abstract, see NSA 28 04, number 10277.

DOCKET-50237-331/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3. SAFETY ANALYSIS REPORT, REVISION TO PROPOSED MODIFICATION 73-1.
16 May 73, 2p DOCKET-50249-227

Descriptors: (*Dresden-2 reactor, *Fuel elements), (*Dresden-3 reactor, Fuel elements), Quality assurance, Reactor licensing, Reactor safety, Specifications.

For abstract, see NSA 28 04, number 10278.

DOCKET-50237-332/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3. SAFETY ANALYSIS REPORT, PROPOSED MODIFICATION 73-1, PAGE 3.
16 May 73, 2p DOCKET-50249-229

Descriptors: (*Dresden-2 reactor, *Fuel elements), (*Dresden-3 reactor, Fuel elements), Quality assurance, Reactor licensing.

For abstract, see NSA 28 04, number 10279.

DOCKET-50237-333/GA PC$10.50/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 2. DRESDEN STATION REPORT NO. 28, ANALYSES AND PROCEDURES FOR HANDLING GENERAL ELECTRIC IF-300 SPENT FUEL SHIPPING CASK.
31 May 73, 170p

Descriptors: (*Dresden-2 reactor, *Spent fuel elements), Accidents, Casks, Radioactive wastes, Reactor licensing, Reactor safety, Transport, Waste management, Waste storage.

For abstract, see NSA 28 05, number 12203.

DOCKET-50237-334/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3. EMERGENCY DIESEL GENERATORS TRIPPED ON HIGH TEMPERATURE.
1 Jun 73, 4p DOCKET-50249-230

Descriptors: (*Dresden-2 reactor, *Diesel engines), (*Dresden-3 reactor, Diesel engines), Electric generators, Failures, High temperature, Reactor licensing, Scram, Valves.

For abstract, see NSA 28 04, number 10280.

DOCKET-50237-336/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 2. THREE CONTROL ROD DRIVES GAVE INDICATION OF AN APPARENT UNCOUPLED CONDITION.
13 Mar 73, 2p

Descriptors: (*Dresden-2 reactor, *Control rod drives), Failures, Reactor licensing, Reactor operation, Testing.

For abstract, see NSA 28 04, number 10281.

DOCKET-50237-337/GA PC$15.75/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3. DRAFT ENVIRONMENTAL STATEMENT.
Jun 73, 271p DOCKET-50249-244

Descriptors: (*Dresden-2 reactor, *Environment), (*Dresden-3 reactor, Environment), Cost benefit analysis, Electric power, Fishes, Monitoring, Nonradioactive wastes, Power transmission, Radiation protection, Radioactive wastes, Reactor licensing, Reactor operation, Reactor sites, Thermal pollution, Waste management.

For abstract, see NSA 28 06, number 14878.

DOCKET-50237-338/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 2. VALVE FOUND WITH THERMAL OVERLOAD TRIPPED.
7 Jun 73, 2p

Descriptors: (*Dresden-2 reactor, *Valves), Closures, Failures, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12204.

DOCKET-50237-340/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 2. ACTIVITY IN SURGE TANK ABOVE TECHNICAL SPECIFICATIONS LIMIT APRIL 5, 1973.
5 Apr 73, 1p

Descriptors: (*Dresden-2 reactor, *Radioactive wastes), Radioactivity, Reactor licensing, Specifications, Tanks.

For abstract, see NSA 28 05, number 12205.

DOCKET-50237-341/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 2. TRIP OF MO-2-1301-1 BREAKER ON APRIL 5, 1973.
5 Apr 73, 1p

Descriptors: (*Dresden-2 reactor, *Valves), Circuit breakers, Failures, Reactor licensing, Steam condensers.

For abstract, see NSA 28 05, number 12206.

DOCKET-50237-343/GA PC$4.50/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3. STEPS TAKEN TO CORRECT ITEMS OF NONCOMPLIANCE BROUGHT TO ATTENTION IN LETTER DATED MARCH 27, 1973.
27 Mar 73, 50p DOCKET-50249-236

Descriptors: (*Dresden-2 reactor, *Inspection), (*Dresden-3 reactor, Inspection), Containment spray systems, Eccs, Reactor licensing, Regulations, Specifications, Temperature measurement, Testing, Valves.

For abstract, see NSA 28 05, number 12207.

DOCKET-50237-344/GA PC$3.75/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3. MAIN STEAM RELIEF AND SAFETY VALVE ANALYSES.
22 Jun 73, 34p DOCKET-50249-237

Descriptors: (*Dresden-2 reactor, *Valves), (*Dresden-3 reactor, Valves), Inspection, Reactor licensing, Steam, Stress analysis.

For abstract, see NSA 28 05, number 12208.

DOCKET-50237-345/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 2. TECHNICAL SPECIFICATIONS, LOW VACUUM SCRAM BYPASS SWITCHES DRIFTED.
22 Jun 73, 4p

Descriptors: (*Dresden-2 reactor, *Switches), Calibration, Reactor licensing, Scram, Specifications.

For abstract, see NSA 28 05, number 12209.

DOCKET-50237-346/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 2. ISOLATION CONDENSER VALVE 1301-1 FOUND INOPERABLE.
15 Jun 73, 2p

Descriptors: (*Dresden-2 reactor, *Valves), Failures, Reactor licensing, Reactor operation, Specifications, Steam condensers.

For abstract, see NSA 28 05, number 12210.

DOCKET-50237-347/GA PC$3.25/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3. ORGANIZATION OF LICENSING DOCUMENTS.
13 Jun 73, 21p DOCKET-50249-241

Descriptors: (*Dresden-2 reactor, *Documentation), (*Dresden-3 reactor, Documentation), Indexes, Reactor licensing.

For abstract, see NSA 28 06, number 14879.

DOCKET-50244-155/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. MONTHLY REPORT OF ACTIVITY MEASUREMENTS, APRIL 1–30, 1973.
17 May 73, 4p

Descriptors: (*Ginna-1 reactor, *Radioactive wastes), Gaseous wastes, Liquid wastes, Radiation monitoring, Reactor licensing.

For abstract, see NSA 28 04, number 10282.

DOCKET-50244-156/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. ARMOR STONE ADDITION TO GINNA BREAKWALL.
15 May 73, 4p

Descriptors: (*Ginna-1 reactor, *Reactor sites), Lake ontario, Reactor licensing, Rocks.

For abstract, see NSA 28 05, number 12211.

DOCKET-50244-157/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, REQUEST FOR CHANGES.
23 May 73, 16p

Descriptors: (*Ginna-1 reactor, *Specifications), Cooling, Heating, Pressure vessels, Pressurizers, Reactor licensing, Steam generators.

For abstract, see NSA 28 04, number 10283.

DOCKET-50244-158/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. VALVE WALL THICKNESS.
22 May 73, 2p

Descriptors: (*Ginna-1 reactor, *Valves), Reactor licensing, Specifications, Thickness.

For abstract, see NSA 28 04, number 10284.

DOCKET-50244-159/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. UNDERVOLTAGE DEVICE DID NOT OPERATE ON MAY 29, 1973.
30 May 73, 2p

Descriptors: (*Ginna-1 reactor, *Switches), Electric coils, Equipment protection devices, Failures, Operation, Reactor licensing, Scram, Solenoids, Testing.

For abstract, see NSA 28 04, number 10285.

DOCKET-50244-160/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. ROD CONTROL SYSTEM MALFUNCTION.
31 May 73, 1p

Descriptors: (*Ginna-1 reactor, *Control elements), Failures, Power, Reactor control systems, Reactor instrumentation, Reactor licensing.

For abstract, see NSA 28 04, number 10286.

DOCKET-50244-161/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. FUEL ROD END PLUG EXAMINATION.
1 Jun 73, 2p

Descriptors: (*Ginna-1 reactor, *Fuel rods), Closures, Failures, Hot cells, Inspection, Reactor licensing.

For abstract, see NSA 28 04, number 10287.

DOCKET-50244-162/GA PC$3.00/MF$1.45
Department of Commerce, Washington, D. C.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF OFFICE OF ASSISTANT SECRETARY OF COMMERCE.
1 Jun 73, 3p

Descriptors: (*Ginna-1 reactor, *Environment), Gaseous wastes, Lake ontario, Radiation monitoring, Reactor licensing, Thermal pollution, Waste disposal.

For abstract, see NSA 28 04, number 10288.

DOCKET-50244-163/GA PC$3.50/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ROCHESTER GAS AND ELECTRIC CORPORATION.
4 Jun 73, 27p

Descriptors: (*Ginna-1 reactor, *Environment), Corrections, Economics, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10289.

DOCKET-50244-164/GA PC$3.00/MF$1.45
Advisory Council on Historic Preservation, Washington, D.C. (Usa).
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ADVISORY COUNCIL ON HISTORIC PRESERVATION.
5 Jun 73, 1p

Descriptors: (*Ginna-1 reactor, *Environment), Archaeology, Reactor licensing.

For abstract, see NSA 28 04, number 10290.

DOCKET-50244-165/GA PC$3.00/MF$1.45
Department of Transportation, Washington, D.C.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DEPARTMENT OF TRANSPORTATION, U. S. COAST GUARD.
Jun 73, 1p

Descriptors: (*Ginna-1 reactor, *Environment), Reactor licensing.

For abstract, see NSA 28 05, number 12212.

DOCKET-50244-166/GA PC$3.00/MF$1.45
Department of Agriculture, Washington, D. C.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF THE DEPARTMENT OF AGRICULTURE.
12 Jun 73, 1p

Descriptors: (*Ginna-1 reactor, *Environment), Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 04, number 10291.

DOCKET-50244-167/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. FAILURE OF UNDERVOLTAGE RELAY.
8 Jun 73, 2p

Descriptors: (*Ginna-1 reactor, *Relays), Failures, Reactor licensing, Reactor operation, Safety engineering.

For abstract, see NSA 28 04, number 10292.

DOCKET-50244-168/GA PC$3.00/MF$1.45
New York State Dept. Of Environmental Conservation, Albany, N.Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF STATE OF NEW YORK, DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
12 Jun 73, 12p

Descriptors: (*Ginna-1 reactor, *Environment), Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 04, number 10293.

DOCKET-50244-169/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, PROPOSED CHANGE 10.
12 Jun 73, 10p

Descriptors: (*Ginna-1 reactor, *Fuel densification), Reactor licensing, Specifications.

For abstract, see NSA 28 04, number 10294.

DOCKET-50244-170/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, PROPOSED CHANGE 10.
12 Jun 73, 10p

Descriptors: (*Ginna-1 reactor, *Fuel densification), Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 05, number 12213.

DOCKET-50244-171/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.

ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 8.
15 May 73, 11p

Descriptors: (*Ginna-1 reactor, *Reactor operation), Reactor licensing, Reactor safety, Specifications.

For abstract, see NSA 28 04, number 10295.

DOCKET-50244-172/GA PC$3.00/MF$1.45
Federal Power Commission, Washington, D.C. Bureau of Power.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL POWER COMMISSION.
21 Jun 73, 4p

Descriptors: (*Ginna-1 reactor, *Environment), Electric power, Reactor licensing, Reactor operation.

For abstract, see NSA 28 06, number 14880.

DOCKET-50244-173/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. MALFUNCTION OF BLEND SYSTEM VALVE FCV-110B.
21 Jun 73, 2p

Descriptors: (*Ginna-1 reactor, *Valves), Boric acid, Control elements, Failures, Leaks, Pumps, Reactor licensing, Specifications, Switches.

For abstract, see NSA 28 05, number 12214.

DOCKET-50244-174/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. ABNORMAL OCCURRENCES 73-3 AND 73-4: FAILURE OF I-C SAFETY INJECTION PUMP.
21 Jun 73, 2p

Descriptors: (*Ginna-1 reactor, *Pumps), Failures, Reactor licensing, Switches.

For abstract, see NSA 28 05, number 12215.

DOCKET-50244-175/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. HIGH BISTABLE SETTING HIGHER THAN SPECIFIED VALUE; SAFETY INJECTION PUMP FAILED TO START MANUALLY; REPEAT OF PREVIOUS FAILURE TO START.
7 Jul 73, 5p

Descriptors: (*Ginna-1 reactor, *Pumps), Failures, Reactor instrumentation, Reactor licensing, Switches.

For abstract, see NSA 28 05, number 12216.

DOCKET-50244-176/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. DISCOVERY OF INCORRECT VALUE FOR HIGH STEAM FLOW BISTABLE TRIP SETPOINT.
18 Jun 73, 2p

Descriptors: (*Ginna-1 reactor, *Valves), Calibration, Reactor licensing, Reactor operation, Steam.

For abstract, see NSA 28 05, number 12217.

DOCKET-50244-177/GA PC$3.00/MF$1.45
Rochester Gas and Electric Corp., N. Y.
ROBERT EMMETT GINNA NUCLEAR POWER PLANT, UNIT 1. MONTHLY REPORT OF ACTIVITY MEASUREMENTS.
18 Jun 73, 2p

Descriptors: (*Ginna-1 reactor, *Radioactive wastes), Gaseous wastes, Liquid wastes, Radiation monitoring, Reactor cooling systems, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12218.

DOCKET-50245-220/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER PLANT, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, ADDITIONAL COMMENTS.
18 May 73, 18p DOCKET-50336-57

Descriptors: (*Millstone-1 reactor, *Environment), (*Millstone-2 reactor, Environment), Fishes, Radioactive waste disposal, Reactor licensing, Stack disposal, Thermal pollution.

For abstract, see NSA 28 04, number 10296.

DOCKET-50245-221/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER PLANT, UNIT 1. CONTROL BLADES.
30 Jan 73, 1p

Descriptors: (*Millstone-1 reactor, *Control elements), Inspection, Quality assurance, Reactor licensing.

For abstract, see NSA 28 04, number 10297.

DOCKET-50245-222/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER PLANT, UNIT 1. AO-73-6, GEAR HOUSING CRACKED.
18 May 73, 2p

Descriptors: (*Millstone-1 reactor, *Valves), Cracks, Mechanical vibrations, Reactor cooling systems, Reactor licensing, Reactor shutdown.

For abstract, see NSA 28 04, number 10298.

DOCKET-50245-223/GA PC$13.50/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNITS 1, 2, AND 3. ENVIRONMENTAL REPORT, ADDENDUM 5.
18 May 73, 228p DOCKET-50336-58, DOCKET-50423-15

Descriptors: (*Millstone-1 reactor, *Environment), (*Millstone-2 reactor, Environment), (*Millstone-3 reactor, Environment), Aquatic ecosystems, Monitoring, Reactor licensing.

For abstract, see NSA 28 05, number 12219.

DOCKET-50245-224/GA PC$3.00/MF$1.45
Environmental Protection Agency, Washington, D.C. (Usa).
MILLSTONE NUCLEAR POWER STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
25 May 73, 19p DOCKET-50336-59

Descriptors: (*Millstone-1 reactor, *Radioactive waste disposal), (*Millstone-2 reactor, Radioactive waste disposal), Environment, Fuels, Iodine, Reactor accidents, Reactor licensing, Transport.

For abstract, see NSA 28 04, number 10299.

DOCKET-50245-225/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 1. FEEDWATER SPARGERS.
21 May 73, 1p

Descriptors: (*Millstone-1 reactor, *Primary coolant circuits), Chlorine, Cracks, Inspection, Mixing, Reactor licensing, Water.

For abstract, see NSA 28 04, number 10300.

DOCKET-50245-226/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER PLANT, UNIT 1. LOCALIZED FLUX TILT.
18 May 73, 2p

Descriptors: (*Millstone-1 reactor, *Neutron flux tilting), In core instruments, Reactor licensing, Reactor safety.

For abstract, see NSA 28 04, number 10301.

DOCKET-50245-227/GA PC$6.75/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 1. FEEDWATER SPARGER FAILURE.
12 Jun 73, 92p

Descriptors: (*Millstone-1 reactor, *Pipelines), Cracks, Failures, Inspection, Reactor cooling systems, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10302.

DOCKET-50245-228/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 1. PROPOSED CHANGE IN FACILITY.
29 May 73, 8p

Descriptors: (*Millstone-1 reactor, *Logic circuits), Eccs, Pumps, Reactor cooling systems, Reactor licensing, Reactor safety, Reactor shutdown, Relays, Switches, Valves.

For abstract, see NSA 28 04, number 10303.

DOCKET-50245-230/GA PC$3.50/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
MILLSTONE NUCLEAR POWER STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 12.
16 May 73, 30p

Descriptors: (*Millstone-1 reactor, *Reactor operation), Monitoring, Reactor cores, Reactor fueling, Reactor licensing, Reactor safety, Specifications.

For abstract, see NSA 28 04, number 10304.

DOCKET-50245-231/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
MILLSTONE NUCLEAR POWER STATION, UNIT 1. INSPECTION REPORT NO. 50-245/73-10.
25 May 73, 16p

Descriptors: (*Millstone-1 reactor, *Inspection), Cracks, Monitoring, Pipes, Reactor components, Reactor licensing, Testing, Ultrasonic testing, Valves, Welded joints.

For abstract, see NSA 28 05, number 12220.

DOCKET-50245-232/GA PC$8.25/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 1. REACTOR CONTAINMENT BUILDING INTEGRATED LEAD RATE TEST.
12 Jun 73, 123p

Descriptors: (*Millstone-1 reactor, *Containment buildings), Inspection, Leak testing, Reactor licensing.

For abstract, see NSA 28 06, number 14881.

DOCKET-50245-233/GA PC$4.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 1. SPECIAL REPORT, CHLORIDE INTRUSION INCIDENT.
29 Jun 73, 38p

Descriptors: (*Millstone-1 reactor, *Reactor safety), Chlorides, Control rod drives, Monitoring, Pipelines, Pressure vessels, Reactor cooling systems, Reactor cores, Reactor licensing, Reactor shutdown, Sampling, Sprays, Steam, Valves.

For abstract, see NSA 28 06, number 14882.

DOCKET-50247-109/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. TECHNICAL SPECIFICATIONS, REQUEST FOR AUTHORIZATION OF A CHANGE.
4 May 73, 3p

Descriptors: (*Indian point-2 reactor, *Specifications), Control elements, Quality control, Reactor instrumentation, Reactor licensing, Reactor operation, Reactor safety, Testing.

For abstract, see NSA 28 04, number 10305.

DOCKET-50247-110/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. LEAKING VALVE.
14 May 73, 2p

Descriptors: (*Indian point-2 reactor, *Valves), Leaks, Reactor licensing.

For abstract, see NSA 28 04, number 10306.

DOCKET-50247-111/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
INDIAN POINT NUCLEAR GENERATING UNIT 2. INSPECTION REPORT NO. 50-247/73-07.
23 Apr 73, 12p

Descriptors: (*Indian point-2 reactor, *Inspection), Control elements, Personnel, Reactor cooling systems, Reactor licensing, Regulations, Steam, Valves.

For abstract, see NSA 28 04, number 10307.

DOCKET-50247-112/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. LEAK OBSERVED ON WELD.
16 May 73, 2p

Descriptors: (*Indian point-2 reactor, *Welded joints), Failures, Heat exchangers, Leaks, Reactor licensing.

For abstract, see NSA 28 04, number 10308.

DOCKET-50247-113/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. MAIN STEAM LINE ISOLATION VALVE FAILED TO CLOSE.
May 73, 1p

Descriptors: (*Indian point-2 reactor, *Valves), Failures, Operation, Reactor licensing, Secondary coolant circuits, Steam.

For abstract, see NSA 28 04, number 10309.

DOCKET-50247-114/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. LEAKING VALVE.
21 May 73, 2p

Descriptors: (*Indian point-2 reactor, *Valves), Leaks, Reactor licensing.

For abstract, see NSA 28 04, number 10310.

DOCKET-50247-115/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. FUEL DENSIFICATION.
29 Mar 73, 2p

Descriptors: (*Indian point-2 reactor, *Fuel assemblies), Eccs, Fuel densification, Loss of coolant, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10311.

DOCKET-50247-116/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. AO-3-2-4, LEAK AT WELD; AO-3-2-5, FREEZE IN REFRIGERATED DRYER OF INSTRUMENT AIR SYSTEM.
25 May 73, 4p

Descriptors: (*Indian point-2 reactor, *Reactor cooling systems), Cracks, Drying, Freezing, Leaks, Mechanical vibrations, Reactor licensing, Valves, Welded joints.

For abstract, see NSA 28 04, number 10312.

DOCKET-50247-117/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. AO-3-2-6, HIGH HEAD SAFETY INJECTION PUMP NOT OPERATIVE.
29 May 73, 2p

Descriptors: (*Indian point-1 reactor, *Pumps), Eccs, Operation, Reactor licensing, Reactor operation, Specifications, Valves.

For abstract, see NSA 28 04, number 10313.

DOCKET-50247-118/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. LOSS OF CONTROL AIR ON MAY 18, 1973; MOTOR OPERATED VALVE DIDN'T OPEN ON MAY 19, 1973; SPURIOUS SAFETY INJECTION SIGNAL WAS INITIATED ON JUNE 1, 1973; FLOW TRIP SETTINGS BELOW THOSE SPECIFIED ON JUNE 7, 1973.
8 Jun 73, 5p

Descriptors: (*Indian point-2 reactor, *Reactor cooling systems), Air, Failures, Losses, Operation, Pumps, Reactor licensing, Reactor operation, Reactor safety, Signals, Testing, Valves.

For abstract, see NSA 28 04, number 10314.

DOCKET-50247-119/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. AO-3-2-7, MALFUNCTION OF MOTOR OPERATED VALVE.
11 Jun 73, 2p

Descriptors: (*Indian point-2 reactor, *Valves), Equipment protection devices, Failures, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10315.

DOCKET-50247-120/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
INDIAN POINT NUCLEAR GENERATING UNIT 2. TECHNICAL SPECIFICATIONS, CHANGE 1.
16 May 73, 5p

Descriptors: (*Indian point-2 reactor, *Reactor operation), Reactor licensing, Specifications, Testing.

For abstract, see NSA 28 05, number 12221.

DOCKET-50247-121/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 2. TECHNICAL SPECIFICATIONS, FLOW TRIP SETTINGS OUT OF CALIBRATION.
15 Jun 73, 2p

Descriptors: (*Indian point-2 reactor, *Reactor cooling systems), Calibration, Circuit breakers, Flow rate, Loss of coolant, Pumps, Reactor licensing, Reactor safety, Scram, Specifications.

For abstract, see NSA 28 06, number 14883.

DOCKET-50249-220/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
DRESDEN NUCLEAR POWER STATION, UNIT 3. INSPECTION REPORT NO. 050-249/73-02.
25 Apr 73, 7p

Descriptors: (*Dresden-3 reactor, *Inspection), Aerosols, Particles, Personnel, Radiation protection, Reactor licensing, Reactor operation, Respirators, Turbines.

For abstract, see NSA 28 04, number 10316.

DOCKET-50249-222/GA PC$14.75/MF$1.45
General Electric CO., San Jose, Calif. Atomic Power Equipment Dept.
DRESDEN NUCLEAR POWER STATION, UNIT 3. SPECIAL REPORT NO. 26, STARTUP TEST REPORT.
Dec 72, 251p NEDC-10692

Descriptors: (*Dresden-3 reactor, *Reactor startup), Reactor licensing, Testing.

For abstract, see NSA 28 05, number 12222.

DOCKET-50249-228/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 3. SWITCH OUT OF CALIBRATION.
21 May 73, 2p

Descriptors: (*Dresden-3 reactor, *Switches), Calibration, Reactor licensing.

For abstract, see NSA 28 04, number 10317.

DOCKET-50249-231/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 3. ISOLATION CONDENSER HIGH CONDENSATE FLOW SWITCH OUT OF CALIBRATION.
21 May 73, 3p

Descriptors: (*Dresden-3 reactor, *Switches), Calibration, Reactor licensing.

For abstract, see NSA 28 05, number 12223.

DOCKET-50249-232/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 3. REACTOR LOW PRESSURE SWITCH OUT OF CALIBRATION.
25 May 73, 3p

Descriptors: (*Dresden-3 reactor, *Switches), Calibration, Reactor licensing.

For abstract, see NSA 28 05, number 12224.

DOCKET-50249-233/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Morris, Ill. (Usa).
DRESDEN NUCLEAR POWER STATION, UNIT 3. STEAM SUPPLY VALVE FAILED TO OPEN.
9 Jun 73, 2p

Descriptors: (*Dresden-3 reactor, *Valves), Equipment protection devices, Failures, Pipelines, Reactor licensing, Steam.

For abstract, see NSA 28 05, number 12225.

DOCKET-50249-238/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 3. TECHNICAL SPECIFICATIONS, PRIMARY CONTAINMENT PENETRATIONS WITH LEAKAGE.
20 Jun 73, 8p

Descriptors: (*Dresden-3 reactor, *Seals), Containment, Leaks, Openings, Personnel, Reactor licensing, Reactor operation, Specifications, Valves.

For abstract, see NSA 28 06, number 14884.

DOCKET-50249-239/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 3. TECHNICAL SPECIFICATIONS, AUTOMATIC PRESSURE RELIEF SYSTEM VALVE FAILED.
20 Jun 73, 2p

Descriptors: (*Dresden-3 reactor, *Valves), Failures, Reactor licensing, Reactor maintenance, Reactor shutdown, Reactor start-up, Specifications.

For abstract, see NSA 28 06, number 14885.

DOCKET-50249-240/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 3. TECHNICAL SPECIFICATIONS, LOW VACUUM SCRAM BYPASS SWITCHES DRIFTED.
22 Jun 73, 2p

Descriptors: (*Dresden-3 reactor, *Switches), Bypasses, Calibration, Inspection, Low pressure, Reactor licensing, Scram, Specifications.

For abstract, see NSA 28 06, number 14886.

DOCKET-50249-242/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 3. FAILURE OF LOW PRESSURE COOLANT INJECTION VALVE.
14 Jun 73, 2p

Descriptors: (*Dresden-3 reactor, *Valves), Brakes, Closures, Eccs, Failures, Reactor licensing, Reactor start-up.

For abstract, see NSA 28 06, number 14887.

DOCKET-50249-243/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
DRESDEN NUCLEAR POWER STATION, UNIT 3. HIGH PRESSURE COOLANT INJECTION STEAM SUPPLY VALVE FAILED TO OPEN COMPLETELY.
14 Jun 73, 2p

Descriptors: (*Dresden-3 reactor, *Valves), Coolants, Eccs, Failures, High pressure, Openings, Reactor licensing, Steam.

For abstract, see NSA 28 06, number 14888.

DOCKET-50250-127/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNITS 3 AND 4. NELIA POLICY NO. NF-185, ENDORSEMENT NO. 20.
27 Apr 73, 2p DOCKET-50251-109

Descriptors: (*Turkey point-3 reactor, *Nuclear insurance), (*Turkey point-4 reactor, Nuclear insurance), Liabilities, Reactor licensing.

For abstract, see NSA 28 05, number 12226.

DOCKET-50250-129/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNITS 3 AND 4. ENVIRONMENTAL TECHNICAL SPECIFICATIONS, REQUEST FOR AUTHORIZATION OF CHANGES.
4 May 73, 5p DOCKET-50251-111

Descriptors: (*Turkey point-3 reactor, *Waste disposal), (*Turkey point-4 reactor, Waste disposal), Environment, Monitoring, Nonradioactive waste disposal, Radioactive wastes, Specifications.

For abstract, see NSA 28 05, number 12227.

DOCKET-50250-130/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Washington, D.C.
TURKEY POINT PLANT, UNIT 3. POWER OUTAGES OF APRIL 3 AND 4.
20 Apr 73, 5p

Descriptors: (*Turkey point-3 reactor, *Reactor shutdown), Equipment protection devices, Failures, Power, Reactor licensing, Reactor safety, Relays, Scram.

For abstract, see NSA 28 04, number 10318.

DOCKET-50250-131/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
TURKEY POINT PLANT, UNITS 3 AND 4. TECHNICAL SPECIFICATIONS, CHANGE 6.
17 May 73, 2p DOCKET-50251-114

Descriptors: (*Turkey point-3 reactor, *Respirators), Reactor licensing, Specifications.

For abstract, see NSA 28 04, number 10319.

DOCKET-50250-132/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNITS 3 AND 4. PROGRAM FOR ASSESSMENT OF IMPACTS FROM TURBIDITY IN DISCHARGED COOLING WATER.
9 May 73, 3p DOCKET-50251-116

Descriptors: (*Turkey point-3 reactor, *Environment), (*Turkey point-4 reactor, Environment), Aquatic ecosystems, Cooling, Liquid wastes, Reactor cooling systems, Reactor licensing, Sampling, Turbulence, Waste disposal, Water, Wind.

For abstract, see NSA 28 05, number 12228.

DOCKET-50250-133/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNITS 3 AND 4. REVIEW OF CONTROL CIRCUITS OF SAFETY RELATED EQUIPMENT.
30 May 73, 1p DOCKET-50251-121

Descriptors: (*Turkey point-3 reactor, *Equipment protection devices), (*Turkey point-4 reactor, Equipment protection devices), Control equipment, Electronic circuits, Reactor licensing, Reactor safety.

For abstract, see NSA 28 05, number 12229.

DOCKET-50250-134/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNITS 3 AND 4. MUTUAL ATOMIC ENERGY LIABILITY UNDERWRITERS' POLICY MF-55, ENDORSEMENTS 10, 11, 12, AND 13.
6 Jun 73, 5p DOCKET-50251-122

Descriptors: (*Turkey point-3 reactor, *Nuclear insurance), (*Turkey point-4 reactor, Nuclear insurance), Liabilities, Reactor licensing.

For abstract, see NSA 28 05, number 12230.

DOCKET-50250-135/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNIT 3. ABNORMAL OCCURRENCE 3-73-4: LOW BORON CONCENTRATION IN 3C ACCUMULATOR.
23 Jun 73, 6p

Descriptors: (*Turkey point-3 reactor, *Fluid poison control), Boric acid, Boron additions, Leaks, Reactor licensing, Reactor safety, Safety engineering, Tanks, Valves.

For abstract, see NSA 28 06, number 14889.

DOCKET-50250-136/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNITS 3 AND 4. TECHNICAL SPECIFICATIONS, PROPOSED CHANGES.
18 Jun 73, 16p DOCKET-50251-123

Descriptors: (*Turkey point-3 reactor, *Personnel), (*Turkey point-4 reactor, Personnel), Corrections, Reactor licensing, Specifications.

For abstract, see NSA 28 06, number 14890.

DOCKET-50250-137/GA PC$4.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNITS 3 AND 4. FUEL DENSIFICATION, LOW PRESSURE ANALYSIS.
5 Jul 73, 39p DOCKET-50251-126, WCAP-8137

Descriptors: (*Turkey point-3 reactor, *Fuel densification), (*Turkey point-4 reactor, Fuel densification), Fluid flow, Fuel cans, Loss of coolant, Medium pressure, Reactor accidents, Reactor licensing, Rotors, Transients.

For abstract, see NSA 28 06, number 14891.

DOCKET-50251-110/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
TURKEY POINT PLANT, UNIT 4. INDEMNITY AGREEMENT NO. B-46, AMENDMENT 5.
23 Apr 73, 2p

Descriptors: (*Turkey point-4 reactor, *Nuclear insurance), Liabilities, Reactor accidents, Reactor licensing.

For abstract, see NSA 28 05, number 12231.

DOCKET-50251-112/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNIT 4. REQUEST FOR CLARIFICATION OF FACILITY OPERATING LICENSE.
4 May 73, 2p

Descriptors: (*Turkey point-4 reactor, *Reactor operation), Aquatic ecosystems, Cooling towers, Environment, Ground water, Reactor cooling systems, Reactor licensing, Surface waters.

For abstract, see NSA 28 05, number 12232.

DOCKET-50251-113/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNIT 4. AO-4-73-5, GENERIC FAILURE OF 14 INCH GATE VALVES.
22 May 73, 2p

Descriptors: (*Turkey point-4 reactor, *Valves), Failures, Pumps, Reactor licensing.

For abstract, see NSA 28 04, number 10320.

DOCKET-50251-115/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNIT 4. AO-4-73-3, 4A RHR PUMP LEAKAGE.
18 May 73, 2p

Descriptors: (*Turkey point-4 reactor, *Pumps), Coolants, Failures, Leaks, Reactor licensing.

For abstract, see NSA 28 04, number 10321.

DOCKET-50251-117/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNIT 4. AO-4-73-4, GENERIC FAILURE OF PRIMARY SYSTEM CHECK VALVES.
18 May 73, 2p

Descriptors: (*Turkey point-4 reactor, *Valves), Failures, Leaks, Pumps, Reactor licensing, Seals.

For abstract, see NSA 28 05, number 12233.

DOCKET-50251-118/GA PC$3.25/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNIT 4. STEPS TAKEN TO CORRECT ITEMS IN VIOLATION OF AEC REQUIREMENTS BROUGHT TO ATTENTION IN LETTER DATED MARCH 12, 1973.
2 Apr 73, 24p

Descriptors: (*Turkey point-4 reactor, *Fabrication), Calibration, Inspection, Personnel, Pressure gages, Quality assurance, Reactor cooling systems, Reactor licensing, Testing.

For abstract, see NSA 28 05, number 12234.

DOCKET-50251-119/GA PC$4.75/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
TURKEY POINT PLANT, UNIT 4. INSPECTION REPORT NO. 50-251/73-2.
23 May 73, 54p

Descriptors: (*Turkey point-4 reactor, *Inspection), Electric cables, Fabrication, Personnel, Pressurizers, Pumps, Radioactive wastes, Reactor cooling systems, Reactor licensing, Valves, Waste disposal, Welded joints.

For abstract, see NSA 28 05, number 12235.

DOCKET-50251-120/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
TURKEY POINT PLANT, UNIT 4. INSPECTION REPORT NO. 50-251/73-3.
10 May 73, 17p

Descriptors: (*Turkey point-4 reactor, *Inspection), Concretes, Control elements, Criticality, Pumps, Quality assurance, Quality control, Reactor fueling, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12236.

DOCKET-50251-124/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNIT 4. ABNORMAL OCCURRENCE NO. 4-73-6, ROD CONTROL CLUSTER H-8 STUCK.
15 Jun 73, 2p

Descriptors: (*Turkey point-4 reactor, *Control elements), Failures, Motion, Reactor control systems, Reactor licensing, Reactor shutdown.

For abstract, see NSA 28 06, number 14892.

DOCKET-50251-125/GA PC$3.00/MF$1.45
Florida Power and Light CO.
TURKEY POINT PLANT, UNIT 4. MODIFICATIONS TO HEAT EXCHANGERS.
16 May 73, 3p

Descriptors: (*Turkey point-4 reactor, *Heat exchangers), Configuration, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12237.

DOCKET-50254-202/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD CITIES STATION, UNITS 1 AND 2. EXCESS CHLORINE RESIDUAL CONCENTRATIONS IN DISCHARGE BAY.
11 May 73, 1p DOCKET-50265-192

Descriptors: (*Quad cities-1 reactor, *Nonradioactive wastes), (*Quad cities-2 reactor, Nonradioactive wastes), Chlorine, Reactor licensing.

For abstract, see NSA 28 04, number 10322.

DOCKET-50254-203/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. DESIGN ERROR IN THE WIRING OF A SAFETY-RELATED SYSTEM.
11 May 73, 3p DOCKET-50265-193

Descriptors: (*Quad cities-1 reactor, *Electronic circuits), (*Quad cities-2 reactor, Electronic circuits), Reactor licensing, Reactor safety, Wires.

For abstract, see NSA 28 04, number 10323.

DOCKET-50254-204/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. NO STATE EFFLUENT LIMITATIONS.
27 Mar 73, 1p DOCKET-50265-196

Descriptors: (*Quad cities-1 reactor, *Environment), (*Quad cities-2 reactor, Environment), Radioactive wastes, Water pollution.

For abstract, see NSA 28 05, number 12238.

DOCKET-50254-205/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. SAFETY ANALYSIS REPORT, REVISION TO PROPOSED MODIFICATION 73-1.
16 May 73, 2p DOCKET-50265-197

Descriptors: (*Quad cities-1 reactor, *Reactor safety), (*Quad cities-2 reactor, Reactor safety), Fuel assemblies, Fuel-cladding interactions, Quality assurance, Reactor licensing.

For abstract, see NSA 28 05, number 12239.

DOCKET-50254-206/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. PROPOSED NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT.
21 May 73, 9p DOCKET-50265-198

Descriptors: (*Quad cities-1 reactor, *Environment), (*Quad cities-2 reactor, Environment), Chlorine, Coolants, Illinois, Nonradioactive wastes, Radioactive wastes, Reactor licensing, Steam condensers, Thermal pollution, Waste disposal, Water pollution.

For abstract, see NSA 28 06, number 14893.

DOCKET-50254-207/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. TECHNICAL SPECIFICATIONS, REQUEST FOR WAIVER OF LIMIT ON CHLORINE IN DISCHARGE BAY.
5 Jun 73, 5p DOCKET-50265-199

Descriptors: (*Quad cities-1 reactor, *Reactor operation), Chlorine, Nonradioactive wastes, Reactor licensing, Specifications, Steam condensers.

For abstract, see NSA 28 05, number 12240.

DOCKET-50254-208/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. DRESDEN NUCLEAR POWER STATION, UNITS 1, 2, AND 3. ZION STATION NUCLEAR POWER PLANT, UNITS 1 AND 2. OVERCURRENT TRIP DELAY DEVICE IN CIRCUIT BREAKERS IN ENGINEERED SAFETY SYSTEMS.
11 Apr 73, 2p DOCKET-50265-204, DOCKET-50010-173

Descriptors: (*Quad cities-1 reactor, *Circuit breakers), (*Quad cities-2 reactor, Circuit breakers), (*Dresden-1 reactor, Circuit breakers), (*Dresden-2 reactor, Circuit breakers), Dresden-3 reactor, Equipment protection devices, Reactor licensing, Zion-1 reactor, Zion-2 reactor.

For abstract, see NSA 28 05, number 12241.

DOCKET-50254-209/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. ISOTOPE RELEASE RATE EXCEEDED.
11 Jun 73, 2p DOCKET-50265-205

Descriptors: (*Quad cities-1 reactor, *Radioactive wastes), (*Quad cities-2 reactor, Radioactive wastes), Iodine 131, Radioactivity, Stack disposal, Ventilation.

For abstract, see NSA 28 04, number 10324.

DOCKET-50254-210/GA PC$3.75/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
QUAD-CITIES STATION, UNITS 1 AND 2. TECHNICAL SPECIFICATIONS, CHANGE 5.
4 May 73, 31p DOCKET-50265-206

Descriptors: (*Quad cities-1 reactor, *Management), (*Quad cities-2 reactor, Management), Personnel, Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 05, number 12242.

DOCKET-50254-211/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
QUAD-CITIES STATION, UNITS 1 AND 2. TECHNICAL SPECIFICATIONS, CHANGE 6.
17 May 73, 6p DOCKET-50265-207

Descriptors: (*Quad cities-1 reactor, *Inspection), (*Quad cities-2 reactor, Inspection), Reactor licensing, Regulations, Specifications.

For abstract, see NSA 28 05, number 12243.

DOCKET-50254-212/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. CHLORINE RESIDUAL CONCENTRATIONS IN EXCESS OF TECHNICAL SPECIFICATIONS.
14 Jun 73, 2p DOCKET-50265-208

Descriptors: (*Quad cities-1 reactor, *Liquid wastes), (*Quad cities-2 reactor, Liquid wastes), Chlorine, Nonradioactive waste disposal, Reactor licensing.

For abstract, see NSA 28 05, number 12244.

DOCKET-50254-213/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. TECHNICAL SPECIFICATIONS, PROPOSED CHANGES.
14 Jun 73, 11p DOCKET-50265-209

Descriptors: (*Quad cities-1 reactor, *Control rod drives), (*Quad cities-2 reactor, Control rod drives), Design, Reactor licensing, Reactor operation, Scram, Specifications, Testing.

For abstract, see NSA 28 06, number 14894.

DOCKET-50254-214/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNIT 1. RELIEF VALVE ON STANDBY LIQUID CONTROL SYSTEM ACTUATED.
12 Jun 73, 5p

Descriptors: (*Quad cities-1 reactor, *Valves), Failures, Pumps, Reactor control systems, Reactor licensing, Reactor operation, Reactor safety, Testing.

For abstract, see NSA 28 06, number 14895.

DOCKET-50254-215/GA PC$4.75/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
QUAD-CITIES STATION, UNIT 1. RELOAD FUEL.
15 Jun 73, 51p

Descriptors: (*Quad cities-1 reactor, *Reactor fueling), (*Quad cities-2 reactor, Reactor fueling), Plutonium oxides, Reactor licensing, Uranium dioxide.

For abstract, see NSA 28 06, number 14896.

DOCKET-50254-216/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
QUAD-CITIES STATION, UNITS 1 AND 2. MODIFIED OFF-GAS SYSTEM.
13 Jun 73, 1p DOCKET-50265-210

Descriptors: (*Quad cities-1 reactor, *Radioactive waste disposal), (*Quad cities-2 reactor, Radioactive waste disposal), Configuration, Gaseous wastes, Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 05, number 12245.

DOCKET-50255-158/GA PC$3.00/MF$1.45
Consumers Power CO., Covert, Mich. (Usa).
PALISADES PLANT. OVEREXPOSURE OF INDIVIDUAL.
5 Apr 73, 6p

Descriptors: (*Palisades-1 reactor, *Personnel), Dose limits, Maximum permissible dose, Radiation doses, Radiation protection, Reactor licensing.

For abstract, see NSA 28 05, number 12246.

DOCKET-50255-159/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
PALISADES PLANT. SPECIAL REPORT NO. 7, ONE HUNDRED PERCENT POWER ESCALATION TESTING.
25 May 73, 14p

Descriptors: (*Palisades-1 reactor, *Reactor operation), Electric power, Radiation monitoring, Reactor licensing, Testing.

For abstract, see NSA 28 04, number 10325.

DOCKET-50255-160/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
PALISADES PLANT. INITIAL OPERATION OF MODIFIED LIQUID RADWASTE SYSTEM WILL BEGIN ABOUT MAY 21, 1973.
8 May 73, 1p

Descriptors: (*Palisades-1 reactor, *Radioactive waste disposal), Liquid wastes, Operation, Reactor licensing.

For abstract, see NSA 28 04, number 10326.

DOCKET-50255-161/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
PALISADES PLANT. AO-1-73, FAILURE OF THE TWO NEUTRON DETECTOR START-UP CHANNELS; AO-2-73, FAILURE OF ONE MAIN STEAM ISOLATION VALVE TO CLOSE.
29 May 73, 2p

Descriptors: (*Palisades-1 reactor, *Neutron detectors), Control systems, Failures, Reactor cores, Reactor licensing, Valves.

For abstract, see NSA 28 05, number 12247.

DOCKET-50255-162/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
PALISADES PLANT. INTERIM SPECIAL TECHNICAL SPECIFICATIONS, PROPOSED CHANGE.
8 Jun 73, 8p

Descriptors: (*Palisades-1 reactor, *Reactor operation), B codes, Failures, Fuel cans, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12248.

DOCKET-50255-163/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
PALISADES PLANT. INSPECTION REPORT NO. 050-255/73-03.
25 May 73, 9p

Descriptors: (*Palisades-1 reactor, *Inspection), Background radiation, Monitoring, Radioactive wastes, Radioactivity, Reactor licensing.

For abstract, see NSA 28 04, number 10327.

DOCKET-50255-164/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
PALISADES PLANT. TECHNICAL SPECIFICATIONS, CHANGE 7.
13 Jun 73, 8p

Descriptors: (*Palisades-1 reactor, *Containment buildings), Leak testing, Personnel, Reactor licensing, Specifications, Valves.

For abstract, see NSA 28 04, number 10328.

DOCKET-50255-165/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
PALISADES PLANT. REACTOR NOISE ANALYSIS.
12 Jun 73, 3p

Descriptors: (*Palisades-1 reactor, *Reactor noise), Fuel assemblies, Motion, Oscillations, Reactor cores, Reactor licensing, Reactor safety, Shrouds, Signals, Wear.

For abstract, see NSA 28 05, number 12249.

DOCKET-50255-166/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
PALISADES PLANT. PRIMARY AND SECONDARY RADIOACTIVITY REPORT, MAY 1973.
18 Jun 73, 3p

Descriptors: (*Palisades-1 reactor, *Radioactive wastes), Gaseous wastes, Iodine 131, Iodine 133, Liquid wastes, Radioactivity, Reactor licensing, Reactor operation, Specifications, Steam generators, Tritium.

For abstract, see NSA 28 05, number 12250.

DOCKET-50255-167/GA PC$4.00/MF$1.45
Consumers Power CO., Jackson, Mich.
PALISADES PLANT. NUCLEAR QUALITY ASSURANCE POLICY MANUAL FOR OPERATION OF NUCLEAR POWER PLANTS.
19 Jun 73, 40p

Descriptors: (*Palisades-1 reactor, *Quality assurance), Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12251.

DOCKET-50259-100/GA PC$3.00/MF$1.45
Mutual Atomic Energy Liability Underwriters, New York (Usa).
BROWNS FERRY NUCLEAR POWER STATION, UNIT 1. INCREASED LIABILITY INSURANCE.
19 Jun 73, 4p

Descriptors: (*Browns ferry-1 reactor, *Nuclear insurance), Liabilities, Reactor accidents, Reactor licensing.

For abstract, see NSA 28 05, number 12258.

DOCKET-50259-93/GA PC$3.00/MF$1.45
Tennessee Valley Authority, Chattanooga.
BROWNS FERRY NUCLEAR POWER STATION, UNITS 1, 2, AND 3. DESIGN DIFFICIENCY IN CONTROL ROD DRIVE AND STANDBY GAS TREATMENT SYSTEMS.
8 May 73, 4p DOCKET-50260-85, DOCKET-50296-81

Descriptors: (*Browns ferry-1 reactor, *Containment systems), (*Browns ferry-2 reactor, Containment systems), (*Browns ferry-3 reactor, Containment systems), Control rod drives, Design, Gaseous wastes, Pipes, Radioactive wastes, Reactor instrumentation, Reactor shutdown, Scram, Seismic effects.

For abstract, see NSA 28 04, number 10329.

DOCKET-50259-94/GA PC$3.00/MF$1.45
Tennessee Valley Authority, Chattanooga.
BROWNS FERRY NUCLEAR POWER STATION, UNITS 1, 2, AND 3. FUEL DENSIFICA-

TION EFFECTS, NEDM--10735, SUPPLEMENTS NOS. 1 AND 2 REFERENCED.
18 May 73, 1p DOCKET-50260-86, DOCKET-50296-82

Descriptors: (*Browns ferry-1 reactor, *Fuel densification), (*Browns ferry-2 reactor, Fuel densification), (*Browns ferry-3 reactor, Fuel densification), Reactor licensing.

For abstract, see NSA 28 05, number 12252.

DOCKET-50259-95/GA PC$3.00/MF$1.45
Tennessee Valley Authority, Chattanooga.
BROWNS FERRY NUCLEAR POWER STATION, UNITS 1, 2, AND 3. ENVIRONMENTAL RADIOACTIVITY LEVELS, SEMIANNUAL REPORT, JANUARY--JUNE 1972, REVISED PAGES 7 AND 8.
18 May 73, 3p DOCKET-50260-87, DOCKET-50296-83

Descriptors: (*Browns ferry-1 reactor, *Environment), (*Browns ferry-2 reactor, Environment), (*Browns ferry-3 reactor, Environment), Radiation monitoring, Reactor licensing, Reactor sites.

For abstract, see NSA 28 05, number 12253.

DOCKET-50259-96/GA PC$28.00/MF$1.45
Tennessee Valley Authority, Chattanooga.
BROWNS FERRY NUCLEAR POWER STATION, UNITS 1, 2, AND 3. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 50.
30 May 73, 517p DOCKET-50260-88, DOCKET-50296-84

Descriptors: (*Browns ferry-1 reactor, *Reactor safety), (*Browns ferry-2 reactor, Reactor safety), (*Browns ferry-3 reactor, Reactor safety), Cooling towers, Reactor control systems, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12254.

DOCKET-50259-97/GA PC$3.25/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
BROWNS FERRY NUCLEAR POWER STATION, UNIT 1. INSPECTION REPORT NO. 50-259/73-5.
1 May 73, 21p

Descriptors: (*Browns ferry-1 reactor, *Inspection), Quality assurance, Radioactive waste disposal, Reactor licensing, Testing.

For abstract, see NSA 28 05, number 12255.

DOCKET-50259-98/GA PC$3.00/MF$1.45
Tennessee Valley Authority, Chattanooga.
BROWNS FERRY NUCLEAR POWER STATION, UNITS 1, 2, AND 3. EFFECTS OF FUEL DENSIFICATION.
21 Jun 73, 1p DOCKET-50260-90, DOCKET-50296-85

Descriptors: (*Browns ferry-1 reactor, *Fuel densification), (*Browns ferry-2 reactor, Fuel densification), (*Browns ferry-3 reactor, Fuel densification), Reactor licensing.

For abstract, see NSA 28 05, number 12256.

DOCKET-50259-99/GA PC$3.00/MF$1.45
Tennessee Valley Authority, Chattanooga.
BROWNS FERRY NUCLEAR POWER STATION, UNIT 1. EQUIPMENT FAILURES.
6 Jun 73, 10p

Descriptors: (*Browns ferry-1 reactor, *Reactor components), Connectors, Diesel engines, Electric probes, Failures, Gaskets, Pipe joints, Switches.

For abstract, see NSA 28 05, number 12257.

DOCKET-50260-89/GA PC$3.50/MF$1.45
Tennessee Valley Authority, Chattanooga.
BROWNS FERRY NUCLEAR POWER STATION, UNIT 2. STEPS TAKEN TO CORRECT ITEM OF APPARENT VIOLATION BROUGHT TO ATTENTION IN LETTER DATED APRIL 17, 1973.
4 May 73, 26p

Descriptors: (*Browns ferry-2 reactor, *Fabrication), Nondestructive testing, Personnel, Quality assurance, Reactor licensing, Shrouds, Specifications, Valves, Welding.

For abstract, see NSA 28 04, number 10330.

DOCKET-50261-168/GA PC$3.00/MF$1.45
South Carolina State Commission of Forestry, Columbia (Usa).
H. B. ROBINSON UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF SOUTH CAROLINA STATE COMMISSION OF FORESTRY.
27 Apr 73, 1p

Descriptors: (*Robinson-2 reactor, *Environment), Forests, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10331.

DOCKET-50261-170/GA PC$4.25/MF$1.45
Eberline Instrument Corp., West Columbia, S.C. (Usa).
H. B. ROBINSON UNIT 2. ENVIRONMENTAL MONITORING REPORT, OCTOBER 1, 1972--DECEMBER 31, 1972.
24 Apr 73, 42p

Descriptors: (*Robinson-2 reactor, *Radiation monitoring), Environment, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10332.

DOCKET-50261-174/GA PC$3.00/MF$1.45
Corps of Engineers, Charleston, S.C. (Usa). Charleston District.
H. B. ROBINSON UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF CHARLESTON DISTRICT, CORPS OF ENGINEERS.
7 May 73, 1p

Descriptors: (*Robinson-2 reactor, *Environment), Reactor licensing.

For abstract, see NSA 28 04, number 10333.

DOCKET-50261-177/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. QUALITY ASSURANCE PROGRAM.
21 May 73, 14p

Descriptors: (*Robinson-2 reactor, *Quality assurance), Eccs, Reactor licensing, Reactor operation, Reactor safety, Specifications.

For abstract, see NSA 28 04, number 10334.

DOCKET-50261-178/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H.B. ROBINSON UNIT 2. INQUIRY REPORT NO. 50-261/73-3Q, UNCONTROLLED LOSS OF CONTAMINATED REFUELING WATER TO OFFSITE DRAINAGE.
1 Jun 73, 6p

Descriptors: (*Robinson-2 reactor, *Radioactive wastes), Contamination, Failures, Liquid wastes, Pumps, Reactor fueling, Reactor licensing.

For abstract, see NSA 28 04, number 10335.

DOCKET-50261-179/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. REFUELING OUTAGE.
25 May 73, 12p

Descriptors: (*Robinson-2 reactor, *Inspection), Control elements, Eccs, Performance, Pumps, Reactor fueling, Reactor licensing, Reactor safety, Scram, Testing.

For abstract, see NSA 28 05, number 12259.

DOCKET-50261-180/GA PC$4.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. STEPS TAKEN TO CORRECT VIOLATIONS OF TECHNICAL SPECIFICATIONS BROUGHT TO ATTENTION IN LETTER DATED MARCH 16, 1973.
2 Apr 73, 37p

Descriptors: (*Robinson-2 reactor, *Reactor operation), Containment, Containment spray systems, Inspection, Personnel, Primary coolant circuits, Pumps, Radiation protection, Reactor licensing, Seals, Specifications, Valves.

For abstract, see NSA 28 05, number 12260.

DOCKET-50261-181/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. REQUEST FOR 94% THERMAL POWER AUTHORIZATION.
4 Jun 73, 1p

Descriptors: (*Robinson-2 reactor, *Reactor operation), Electric power, Fuel densification, Reactor licensing.

For abstract, see NSA 28 05, number 12261.

DOCKET-50261-182/GA PC$3.00/MF$1.45
Department of Commerce, Washington, D.C.
H. B. ROBINSON UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF OFFICE OF ASSISTANT SECRETARY OF COMMERCE.
5 Jun 73, 3p

Descriptors: (*Robinson-2 reactor, *Environment), Cost, Electric power, Gaseous wastes, Radioactive wastes, Reactor licensing, Stack disposal, Steam generators.

For abstract, see NSA 28 05, number 12262.

DOCKET-50261-183/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF GOVERNOR OF SOUTH CAROLINA; SOUTH CAROLINA STATE BOARD OF HEALTH; SOUTH CAROLINA STATE HIGHWAY DEPARTMENT; SOUTH CAROLINA STATE COMMISSION OF FORESTRY; SOUTH CAROLINA STATE DEVELOPMENT BOARD; SOUTH CAROLINA DEPARTMENT OF ARCHIVES AND HISTORY.
6 Jun 73, 6p

Descriptors: (*Robinson-2 reactor, *Environment), Ecology, Forests, Radiation monitoring, Reactor licensing, Transport.

For abstract, see NSA 28 06, number 14897.

DOCKET-50261-184/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. MONTHLY REPORT OF PRIMARY AND SECONDARY ACTIVITY MEASUREMENTS AND EFFLUENT DISCHARGE ACTIVITY LEVELS.
4 Jun 73, 2p

Descriptors: (*Robinson-2 reactor, *Radioactive wastes), Gaseous wastes, Iodine 131, Radioactive waste disposal, Radioactivity, Reactor licensing, Stack disposal.

For abstract, see NSA 28 05, number 12263.

DOCKET-50261-185/GA PC$3.00/MF$1.45
Department of Transportation, Washington, D.C.
H. B. ROBINSON UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DEPARTMENT OF TRANSPORTATION, U. S. COAST GUARD.
5 Jun 73, 1p

Descriptors: (*Robinson-2 reactor, *Environment), Reactor licensing.

For abstract, see NSA 28 04, number 10336.

DOCKET-50261-186/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Hartsville, S.C. (Usa).
H. B. ROBINSON UNIT 2. VENT VALVES ON PRESSURE SENSING LINE OPEN.
6 Jun 73, 2p

Descriptors: (*Robinson-2 reactor, *Valves), Closures, Containment, Failures, Pressure gages, Reactor licensing.

For abstract, see NSA 28 05, number 12264.

DOCKET-50261-187/GA PC$3.00/MF$1.45
South Carolina Pollution Control Authority, Columbia (Usa).
H. B. ROBINSON UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF SOUTH CAROLINA POLLUTION CONTROL AUTHORITY.
8 Jun 73, 3p

Descriptors: (*Robinson-2 reactor, *Environment), Monitoring, Reactor licensing, Temperature measurement, Thermal pollution.

For abstract, see NSA 28 05, number 12265.

DOCKET-50261-188/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C. Darlington County Water and Sewer Authority, S.C. (Usa). Darlington County Development Board, S.C. (Usa).
H. B. ROBINSON UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF CAROLINA POWER AND LIGHT COMPANY; DARLINGTON COUNTY WATER AND SEWER AUTHORITY; DARLINGTON COUNTY DEVELOPMENT BOARD.
11 Jun 73, 9p

Descriptors: (*Robinson-2 reactor, *Environment), Reactor licensing, Reactor sites.

For abstract, see NSA 28 06, number 14898.

DOCKET-50261-189/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
H. B. ROBINSON UNIT 2. TECHNICAL SPECIFICATIONS, CHANGE 18.
15 May 73, 10p

Descriptors: (*Robinson-2 reactor, *Reactor operation), Electric power, Reactor licensing, Reactor shutdown, Specifications.

For abstract, see NSA 28 04, number 10337.

DOCKET-50261-190/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
H. B. ROBINSON UNIT 2. TECHNICAL SPECIFICATIONS, CHANGE 19.
13 Jun 73, 11p

Descriptors: (*Robinson-2 reactor, *Steam generators), Reactor licensing, Secondary coolant circuits, Specifications, Testing.

For abstract, see NSA 28 04, number 10338.

DOCKET-50261-191/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. LICENSE DPR-23, DETERMINATION OF SHUTDOWN MARGIN.
13 Jun 73, 2p

Descriptors: (*Robinson-2 reactor, *Reactor shutdown), Boron additions, Control rod worths, Reactor licensing, Reactor safety, Specifications.

For abstract, see NSA 28 05, number 12266.

DOCKET-50261-192/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. REQUEST FOR 100% THERMAL POWER AUTHORIZATION.
13 Jun 73, 5p

Descriptors: (*Robinson-2 reactor, *Reactor operation), Power, Reactor licensing.

For abstract, see NSA 28 05, number 12267.

DOCKET-50261-193/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. ABNORMAL OCCURRENCE REPORT: OPEN VENT VALVES.
14 Jun 73, 2p

Descriptors: (*Robinson-2 reactor, *Valves), Closures, Containment, Equipment protection devices, Pressure gages, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12268.

DOCKET-50261-194/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. TECHNICAL SPECIFICATIONS, REQUEST FOR REVISION.
15 Jun 73, 4p

Descriptors: (*Robinson-2 reactor, *Testing), Inspection, Reactor licensing, Reactor maintenance, Specifications.

For abstract, see NSA 28 05, number 12269.

DOCKET-50261-195/GA PC$3.00/MF$1.45
Federal Power Commission, Washington, D.C. Bureau of Power.
H. B. ROBINSON UNIT 2. ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL POWER COMMISSION.
21 Jun 73, 3p

Descriptors: (*Robinson-2 reactor, *Environment), Electric power, Reactor licensing, Reliability.

For abstract, see NSA 28 05, number 12270.

DOCKET-50261-196/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
H. B. ROBINSON UNIT 2. REQUEST FOR 100% THERMAL POWER AUTHORIZATION.
20 Jun 73, 3p

Descriptors: (*Robinson-2 reactor, *Reactor operation), Reactor licensing.

For abstract, see NSA 28 05, number 12271.

DOCKET-50263-207/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. CURRENT BREAKERS.
15 Mar 73, 1p

Descriptors: (*Monticello reactor, *Circuit breakers), Equipment protection devices, Reactor licensing.

For abstract, see NSA 28 04, number 10339.

DOCKET-50263-208/GA PC$3.00/MF$1.45
Northern States Power CO., Monticello, Minn. (Usa).
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. NO. 11 EMERGENCY DIESEL GENERATOR FAILED TO START ON MAY 8, 1973. HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATED ON HIGH STEAM FLOW.
19 May 73, 2p

Descriptors: (*Monticello reactor, *Diesel engines), Coolants, Eccs, Electric generaton, Steam, Testing.

For abstract, see NSA 28 05, number 12272.

DOCKET-50263-209/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. REACTOR BUILDING TO TORUS VACUUM BREAKER DIFFERENTIAL CONTROL SWITCH SET POINT CHANGE.
16 May 73, 1p

Descriptors: (*Monticello reactor, *Switches), Circuit breakers, Failures, Reactor licensing.

For abstract, see NSA 28 04, number 10340.

DOCKET-50263-210/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. MALFUNCTION OF NO. 1 STARTING SYSTEM OF NO. 11 EMERGENCY DIESEL GENERATOR.
14 May 73, 2p

Descriptors: (*Monticello reactor, *Diesel engines), Electric generators, Failures, Lubrication, Operation, Reactor licensing.

For abstract, see NSA 28 04, number 10341.

DOCKET-50263-211/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. INSPECTION REPORT NO. 050-263/73-04.
10 May 73, 20p

Descriptors: (*Monticello reactor, *Inspection), Containment, Control rod drives, Failures, Gases, Quality assurance, Reactor fueling, Reactor licensing, Storage, Switches, Tanks, Valves.

For abstract, see NSA 28 04, number 10342.

DOCKET-50263-212/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. IMPROPER DESIGN OF THE MAIN STEAM CHASE BLOWOUT PANELS.
23 May 73, 1p

Descriptors: (*Monticello reactor, *Specifications), Design, Fasteners, Pipelines, Reactor fueling, Reactor licensing, Steam.

For abstract, see NSA 28 04, number 10343.

DOCKET-50263-213/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.

MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. INOPERABILITY OF A PRIMARY CONTAINMENT VALVE T-RING SEAL.
25 May 73, 2p

Descriptors: (*Monticello reactor, *Valves), Containment, Failures, Operation, Reactor licensing, Seals.

For abstract, see NSA 28 04, number 10344.

DOCKET-50263-214/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. HIGH PRESSURE COOLANT INJECTION SYSTEM INOPERABILITY.
25 May 73, 2p

Descriptors: (*Monticello reactor, *Eccs), Control systems, Reactor cooling systems, Reactor licensing, Valves.

For abstract, see NSA 28 04, number 10345.

DOCKET-50263-215/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. THREE CONTAINMENT ISOLATION VALVES FOUND TO LEAK, JANUARY 18, 1973; TORUS MANWAY COVER OPENED WHEN REACTOR TEMPERATURE WAS 260 EXP 0 F, MARCH 8, 1973; LINE FUSES FOR EXHAUST FAN MOTORS AT LOWER RATING THAN SPECIFIED, MARCH 31, 1973; REACTOR BUILDING-TO-TORUS VACUUM BREAKER VALVE MALFUNCTION, MAY 17, 1973; LOW BORON CONCENTRATION IN STANDBY LIQUID CONTROL STORAGE TANK, MAY 23, 1973.
25 May 73, 5p

Descriptors: (*Monticello reactor, *Boron additions), Electric fuses, Poisoning, Reactor control systems, Reactor licensing, Tanks, Valves.

For abstract, see NSA 28 05, number 12273.

DOCKET-50263-216/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. LOW BORON CONCENTRATION IN STANDBY LIQUID CONTROL SYSTEM.
4 Jun 73, 2p

Descriptors: (*Monticello reactor, *Reactor control systems), Boron additions, Chemical composition, Poisoning, Reactor licensing.

For abstract, see NSA 28 05, number 12274.

DOCKET-50263-217/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE REQUEST DATED JUNE 1, 1973.
1 Jun 73, 17p

Descriptors: (*Monticello reactor, *Reactor operation), Reactor licensing, Specifications, Transients.

For abstract, see NSA 28 05, number 12275.

DOCKET-50263-218/GA PC$3.50/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. SEMIANNUAL OPERATING REPORT NO. 4, REVISED PAGES.
6 Jun 73, 30p

Descriptors: (*Monticello reactor, *Reactor operation), Radiation monitoring, Radioactive wastes.

For abstract, see NSA 28 05, number 12276.

DOCKET-50263-219/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 7.
4 May 73, 2p

Descriptors: (*Monticello reactor, *Respirators), Reactor licensing, Specifications.

For abstract, see NSA 28 04, number 10346.

DOCKET-50263-220/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. MALFUNCTION OF RELIEF VALVE BELLOWS LEAK DETECTION SYSTEM PRESSURE SWITCHES.
18 Jun 73, 2p

Descriptors: (*Monticello reactor, *Switches), Calibration, Failures, Leaks, Reactor licensing, Reactor shutdown, Valves.

For abstract, see NSA 28 05, number 12277.

DOCKET-50263-221/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
MONTICELLO NUCLEAR GENERATING PLANT, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE REQUEST DATED JUNE 1, 1973.
20 Jun 73, 4p

Descriptors: (*Monticello reactor, *Reactor operation), Bypasses, Reactor licensing, Scram, Specifications, Transients, Turbines.

For abstract, see NSA 28 05, number 12278.

DOCKET-50265-194/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNIT 2. EXCESSIVE LEAKAGE MEASUREMENT.
16 May 73, 3p

Descriptors: (*Quad cities-2 reactor, *Valves), Containment, Leak testing, Leaks, Reactor licensing.

For abstract, see NSA 28 04, number 10347.

DOCKET-50265-195/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNIT 2. UNAVAILABILITY OF SHARED DIESEL GENERATOR.
15 May 73, 2p

Descriptors: (*Quad cities-2 reactor, *Diesel engines), Electric generators, Operation, Power, Reactor licensing, Relays, Testing.

For abstract, see NSA 28 04, number 10348.

DOCKET-50265-200/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
QUAD-CITIES STATION, UNIT 2. STEPS TAKEN TO CORRECT ITEMS OF APPARENT NONCOMPLIANCE BROUGHT TO ATTENTION IN LETTER DATED APRIL 2, 1973.
30 Apr 73, 20p

Descriptors: (*Quad cities-2 reactor, *Stack disposal), Circuit breakers, Combustion, Filters, Gases, Hydrogen, Inspection, Iodine 131, Lightning, Radioactivity, Reactor licensing, Reactor safety, Ventilation.

For abstract, see NSA 28 04, number 10349.

DOCKET-50265-201/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNIT 2. DIESEL GENERATOR COULD NOT BE RESTARTED.
20 May 73, 2p

Descriptors: (*Quad cities-2 reactor, *Diesel engines), Electric generators, Failures, Reactor licensing, Reactor operation, Testing.

For abstract, see NSA 28 04, number 10350.

DOCKET-50265-202/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNIT 2. MISSING VALVE COMPONENTS.
23 May 73, 2p

Descriptors: (*Quad cities-2 reactor, *Valves), Configuration, Pipelines, Reactor licensing, Specifications, Steam.

For abstract, see NSA 28 04, number 10351.

DOCKET-50265-203/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Cordova, Ill.
QUAD-CITIES STATION, UNIT 2. FAILURE OF THE SHARED DIESEL-GENERATOR TURBOCHARGER UNIT.
25 May 73, 2p

Descriptors: (*Quad cities-2 reactor, *Diesel engines), Electric generators, Failures, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10352.

DOCKET-50266-109/GA PC$3.00/MF$1.45
Wisconsin Electric Power CO., Milwaukee.
POINT BEACH NUCLEAR PLANT, UNIT 1. FAILURE DURING TEST OF NON-SAFEGUARDS BUS UNDERVOLTAGE RELAY.
14 May 73, 2p

Descriptors: (*Point beach-1 reactor, *Relays), Failures, Reactor licensing, Testing.

For abstract, see NSA 28 04, number 10353.

DOCKET-50266-110/GA PC$3.50/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
POINT BEACH NUCLEAR PLANT, UNIT 1. TECHNICAL SPECIFICATION CHANGE 4.
22 May 73, 30p

Descriptors: (*Point beach-1 reactor, *Reactor operation), Burnup, Fuel cycle, Power density, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12279.

DOCKET-50266-111/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2. INSPECTION REPORTS NOS. 050-266/73-06 AND 050-301/73-04.
4 May 73, 17p DOCKET-50301-97

Descriptors: (*Point beach-1 reactor, *Inspection), (*Point beach-2 reactor, Inspection), Electric power, Performance, Radioactivity, Reactor licensing, Reactor safety, Regulations, Testing, Valves.

For abstract, see NSA 28 05, number 12280.

DOCKET-50266-112/GA PC$3.50/MF$1.45
Wisconsin Electric Power CO., Milwaukee.
POINT BEACH NUCLEAR PLANT, UNIT 1. STEAM GENERATOR CLADDING REPAIRS.
24 Apr 73, 29p

Descriptors: (*Point beach-1 reactor, *Steam generators), Quality assurance, Reactor licensing, Repair, Tubes.

For abstract, see NSA 28 04, number 10354.

DOCKET-50266-113/GA PC$3.00/MF$1.45
Wisconsin Electric Power CO., Milwaukee.
POINT BEACH NUCLEAR PLANT, UNIT 1. PERSONNEL EXPOSURE DATA.
15 May 73, 1p

Descriptors: (*Point beach-1 reactor, *Personnel), Data, Meetings, Radiation doses, Radiation protection, Reactor licensing.

For abstract, see NSA 28 05, number 12281.

DOCKET-50266-114/GA PC$3.00/MF$1.45
Wisconsin Electric Power CO., Milwaukee.
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2. UNSCHEDULED RELEASE OF RADIOACTIVITY.
28 May 73, 1p DOCKET-50301-98

Descriptors: (*Point beach-1 reactor, *Radioactive wastes), (*Point beach-2 reactor, Radioactive wastes), Evaporators, Reactor licensing, Stack disposal, Valves.

For abstract, see NSA 28 05, number 12282.

DOCKET-50266-115/GA PC$13.75/MF$1.45
Wisconsin Electric Power CO., Milwaukee. Wisconsin Michigan Power CO., Appleton, Wis.
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2. LICENSE APPLICATION, AMENDMENT 13.
8 Jun 73, 233p DOCKET-50301-99

Descriptors: (*Point beach-1 reactor, *Reactor licensing), (*Point beach-2 reactor, Reactor licensing), Eccs, Environment, Nozzles, Personnel, Radiation monitoring, Reactor cores, Reactor operation, Steam generators, Tubes.

For abstract, see NSA 28 06, number 14899.

DOCKET-50267-60/GA PC$3.00/MF$1.45
Environmental Protection Agency, Denver, Colo. (Usa).
FORT ST. VRAIN NUCLEAR GENERATING STATION. FACT SHEET RELATIVE TO APPLICATION FOR NPDES PERMIT TO DISCHARGE LIQUID EFFLUENT.
24 Apr 73, 16p

Descriptors: (*Vrain reactor, *Liquid wastes), Radioactive wastes, Reactor licensing.

For abstract, see NSA 28 04, number 10355.

DOCKET-50267-63/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Denver, Colo. Region IV.
FORT ST. VRAIN NUCLEAR GENERATING STATION. INSPECTION REPORT NO. 50-267/73-03.
15 May 73, 16p

Descriptors: (*Vrain reactor, *Heat exchangers), Corrosion products, Inspection, Personnel, Reactor licensing, Reactor operation, Testing.

For abstract, see NSA 28 04, number 10356.

DOCKET-50267-64/GA PC$4.50/MF$1.45
Public Service CO. Of Colorado, Denver.
FORT ST. VRAIN NUCLEAR GENERATING STATION. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 27.
11 May 73, 49p

Descriptors: (*Vrain reactor, *Reactor safety), Reactor licensing, Reactor sites, Safety engineering.

For abstract, see NSA 28 05, number 12283.

DOCKET-50267-65/GA PC$3.00/MF$1.45
Public Service CO. Of Colorado, Denver.
FORT ST. VRAIN NUCLEAR GENERATING STATION. DEFFICIENCY IN STANDBY DIESEL-GENERATORS.
19 Apr 73, 3p

Descriptors: (*Vrain reactor, *Diesel engines), Defects, Electric generators, Failures, Reactor cooling systems, Reactor licensing.

For abstract, see NSA 28 04, number 10357.

DOCKET-50267-66/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Denver, Colo. Region IV.
FORT ST. VRAIN NUCLEAR GENERATING STATION. COOPERATIVE PROGRAM OF EFFLUENT AND ENVIRONMENTAL MONITORING.
1 Jun 73, 2p

Descriptors: (*Vrain reactor, *Radiation monitoring), Colorado, Environment, Monitoring, Radioactive wastes, Reactor licensing, Us aec.

For abstract, see NSA 28 05, number 12284.

DOCKET-50267-67/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
FORT ST. VRAIN NUCLEAR GENERATING STATION. SAFETY EVALUATION, SUPPLEMENT 1.
12 Jun 73, 7p

Descriptors: (*Vrain reactor, *Reactor safety), Containment, Design, Pipelines, Prestressed concrete, Reactor licensing, Reactor shutdown, Ruptures.

For abstract, see NSA 28 04, number 10358.

DOCKET-50269-110/GA PC$3.00/MF$1.45
Duke Power CO., Charlotte, N.C.
OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3. VALVE WALL THICKNESS MEASUREMENTS, ADDITIONAL INFORMATION.
30 Mar 73, 4p DOCKET-50270-90, DOCKET-50287-81

Descriptors: (*Oconee-1 reactor, *Valves), Reactor licensing, Reactor safety, Thickness.

For abstract, see NSA 28 04, number 10359.

DOCKET-50269-112/GA PC$3.75/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
OCONEE NUCLEAR STATION, UNIT 1. INSPECTION REPORT NO. 50-269/73-3.
1 Jun 73, 31p

Descriptors: (*Oconee-1 reactor, *Inspection), Environment, Fires, Nonradioactive wastes, Personnel, Ph value, Pumps, Reactivity coefficients, Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 04, number 10360.

DOCKET-50269-113/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
OCONEE NUCLEAR STATION, UNIT 1. INSPECTION REPORT NO. 50-269/73-5.
1 Jun 73, 12p

Descriptors: (*Oconee-1 reactor, *Inspection), Flowmeters, Pumps, Reactor licensing, Reactor operation, Standards, Testing, Valves.

For abstract, see NSA 28 04, number 10361.

DOCKET-50269-114/GA PC$3.00/MF$1.45
Duke Power CO., Charlotte, N.C.
OCONEE NUCLEAR STATION, UNIT 1. ADDITIONAL COOLING WATER DURING LOSS OF COOLANT ACCIDENT.
1 Feb 73, 1p

Descriptors: (*Oconee-1 reactor, *Eccs), Loss of coolant, Pumps, Reactor accidents, Reactor licensing, Valves, Water.

For abstract, see NSA 28 05, number 12285.

DOCKET-50269-115/GA PC$3.00/MF$1.45
Duke Power CO., Charlotte, N.C.
OCONEE NUCLEAR STATION, UNIT 1. REACTOR BUILDING SPRAY PUMPS INOPERABLE DURING REACTOR OPERATION.
18 May 73, 4p

Descriptors: (*Oconee-1 reactor, *Containment spray systems), Circuit breakers, Pumps, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12286.

DOCKET-50269-116/GA PC$3.00/MF$1.45
Duke Power CO., Charlotte, N.C.
OCONEE NUCLEAR STATION, UNIT 1. REQUEST FOR CHANGE IN TECHNICAL SPECIFICATIONS.
30 May 73, 1p

Descriptors: (*Oconee-1 reactor, *Fuel densification), Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 05, number 12287.

DOCKET-50269-117/GA PC$4.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
OCONEE NUCLEAR STATION, UNIT 1. TECHNICAL SPECIFICATIONS, CHANGE 3.
6 Jun 73, 38p

Descriptors: (*Oconee-1 reactor, *Power density), Fuel densification, Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 05, number 12288.

DOCKET-50270-92/GA PC$3.75/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
OCONEE NUCLEAR STATION, UNIT 2. INSPECTION REPORT NO. 50-270/73-2.
10 Apr 73, 33p

Descriptors: (*Oconee-2 reactor, *Inspection), Coolants, Defects, Pumps, Quality assurance, Reactor cores, Reactor licensing, Reactor safety, Supports, Welding.

For abstract, see NSA 28 04, number 10362.

DOCKET-50270-93/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
OCONEE NUCLEAR STATION, UNIT 2. INSPECTION REPORT NO. 50-270/73-5.
1 Jun 73, 17p

Descriptors: (*Oconee-2 reactor, *Inspection), Failures, Pumps, Quality assurance, Reactor components, Reactor cores, Reactor licensing, Testing.

For abstract, see NSA 28 04, number 10363.

DOCKET-50271-173/GA PC$18.75/MF$1.45
Aquatec, Inc., South Burlington, VT. (Usa).
VERMONT YANKEE NUCLEAR POWER STATION. ECOLOGICAL STUDIES OF THE CONNECTICUT RIVER, VERNON, VERMONT.
1973, 333p

Descriptors: (*Vermont yankee reactor, *Environment), Aquatic ecosystems, Monitoring, Reactor licensing, Rivers.

For abstract, see NSA 28 05, number 12289.

DOCKET-50271-181/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
VERMONT YANKEE NUCLEAR POWER STATION. INSPECTION REPORT NO. 50-271/73-05.
27 Apr 73, 6p

Descriptors: (*Vermont yankee reactor, *Inspection), Legal aspects, Personnel, Reactor licensing.

For abstract, see NSA 28 05, number 12290.

DOCKET-50271-182/GA PC$3.00/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. AO-73-13, MECHANICAL TRIP MECHANISM IN BREAKER UNDEPENDABLE; AO-73-14, VALVES FAILED TO CLOSE FULLY DURING GROUP III ISOLATION.
31 May 73, 3p

Descriptors: (*Vermont yankee reactor, *Circuit breakers), Electric fuses, Failures, Pumps, Radiation monitors, Reactor licensing, Valves, Ventilation.

For abstract, see NSA 28 05, number 12291.

DOCKET-50271-183/GA PC$3.00/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. REQUEST FOR CHANGES IN TECHNICAL SPECIFICATIONS.
23 May 73, 11p

Descriptors: (*Vermont yankee reactor, *Specifications), Reactor accidents, Reactor licensing.

For abstract, see NSA 28 05, number 12292.

DOCKET-50271-184/GA PC$3.00/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. CONTAINMENT AIR DILUTION SYSTEM.
4 Jun 73, 4p

Descriptors: (*Vermont yankee reactor, *Containment systems), Controlled atmospheres, Reactor licensing.

For abstract, see NSA 28 05, number 12293.

DOCKET-50271-185/GA PC$3.00/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. AO-73-14, BLOWN FUSE.
6 Jun 73, 2p

Descriptors: (*Vermont yankee reactor, *Electric fuses), Failures, Reactor licensing.

For abstract, see NSA 28 05, number 12294.

DOCKET-50271-186/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
VERMONT YANKEE NUCLEAR POWER STATION. TECHNICAL SPECIFICATIONS, CHANGE 9.
11 Jun 73, 12p

Descriptors: (*Vermont yankee reactor, *Reactor operation), Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12295.

DOCKET-50271-187/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
VERMONT YANKEE NUCLEAR POWER STATION. TECHNICAL SPECIFICATIONS, CHANGE 8.
3 May 73, 4p

Descriptors: (*Vermont yankee reactor, *Personnel), Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 05, number 12296.

DOCKET-50271-188/GA PC$4.00/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. TECHNICAL SPECIFICATIONS, PROPOSED CHANGE 12.
30 May 73, 37p

Descriptors: (*Vermont yankee reactor, *Reactor operation), Reactor instrumentation, Reactor licensing, Regulations, Specifications.

For abstract, see NSA 28 05, number 12297.

DOCKET-50271-189/GA PC$3.00/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. AO-73-15, FIRST STAGE TURBINE PRESSURE PERMISSIVE PRESSURE SWITCH FAILED TO ACTUATE AT PROPER SET-POINT; AO-73-16, LIGHTNING STRUCK TOP OF PLANT VENTILATION STACK; AO-73-17, DRYWELL PURGING AND VENT EXHAUST VALVE FAILED TO SHUT.
22 Jun 73, 10p

Descriptors: (*Vermont yankee reactor, *Stacks), Failures, Lightning, Pressure gages, Reactor licensing, Switches, Valves.

For abstract, see NSA 28 05, number 12298.

DOCKET-50271-190/GA PC$3.50/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. OPERATION REPORT NO. 73-04 FOR APRIL 1973.
14 Jun 73, 29p

Descriptors: (*Vermont yankee reactor, *Reactor operation), Radiation doses, Radioactive wastes, Reactor maintenance.

For abstract, see NSA 28 05, number 12299.

DOCKET-50271-191/GA PC$3.50/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. OPERATION REPORT NO. 73-05 FOR MAY 1973.
14 Jun 73, 26p

Descriptors: (*Vermont yankee reactor, *Reactor maintenance), Electric power, Failures, Monitoring, Pumps, Radioactive wastes, Reactor licensing, Reactor operation, Scram, Steam, Turbines, Valves.

For abstract, see NSA 28 05, number 12300.

DOCKET-50271-192/GA PC$3.50/MF$1.45
Vermont Yankee Nuclear Power Corp., Rutland.
VERMONT YANKEE NUCLEAR POWER STATION. TREATMENT OF COOLING WATER WITH SODIUM HYPOCHLORITE.
19 Jun 73, 29p

Descriptors: (*Vermont yankee reactor, *Reactor cooling systems), Blowdown, Chlorination, Coolants, Cooling towers, Lakes, Reactor licensing.

For abstract, see NSA 28 06, number 14900.

DOCKET-50272-66/GA PC$18.25/MF$1.45
Public Service Electric and Gas CO., Newark, N.J.
SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 22.
21 May 73, 323p DOCKET-50311-65

Descriptors: (*Salem-1 reactor, *Reactor safety), (*Salem-2 reactor, Reactor safety), Containment buildings, Personnel, Radiation monitoring, Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 05, number 12301.

DOCKET-50272-67/GA PC$3.50/MF$1.45
Public Service Electric and Gas CO., Newark, N.J.
SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2. ACTION TAKEN TO CORRECT ITEMS OF VIOLATION BROUGHT TO ATTENTION FOLLOWING INSPECTION ON JANUARY 31, 1973 AND FEBRUARY 1 AND 2, 1973.
3 Apr 73, 26p DOCKET-50311-66

Descriptors: (*Salem-1 reactor, *Inspection), (*Salem-2 reactor, Inspection), Containment, Defects, Electric batteries, Industrial radiography, Personnel, Quality control, Reactor licensing, Tanks, Valves.

For abstract, see NSA 28 05, number 12302.

DOCKET-50272-68/GA PC$3.00/MF$1.45
Delaware River Basin Commission, Trenton, N.J. (Usa).
SALEM NUCLEAR GENERATING STATION, UNIT 1. WATER QUALITY CERTIFICATION BY DELAWARE RIVER BASIN COMMISSION.
21 May 73, 1p

Descriptors: (*Salem-1 reactor, *Environment), Reactor licensing, Water.

For abstract, see NSA 28 05, number 12303.

DOCKET-50272-69/GA PC$3.00/MF$1.45
Public Service Electric and Gas CO., Newark, N.J.
SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2. FUEL DENSIFICATION EFFECT, ADDITIONAL INFORMATION.
9 Jan 73, 2p DOCKET-50311-67

Descriptors: (*Salem-1 reactor, *Fuel densification), (*Salem-2 reactor, Fuel densification), Fabrication, Fuel elements, Reactor cores, Reactor licensing.

For abstract, see NSA 28 05, number 12304.

DOCKET-50272-70/GA PC$3.00/MF$1.45
Delaware River Basin Commission, Trenton, N.J. (Usa).
SALEM NUCLEAR GENERATING STATION, UNIT 1. DELAWARE RIVER BASIN COMMISSION ACTION DATED OCTOBER 29, 1971 WAS NOT INTENDED AS A WATER QUALITY CERTIFICATION.
8 May 73, 1p

Descriptors: (*Salem-1 reactor, *Environment), Reactor licensing, Water.

For abstract, see NSA 28 05, number 12305.

DOCKET-50272-71/GA PC$3.00/MF$1.45
Public Service Electric and Gas CO., Newark, N.J.
SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2. NO. 11 AND 12 CONTAINMENT SPRAY PUMPS, NO. 13 COMPONENT COOLING PUMP; NO. 11, 12, 13, AND 14

REACTOR COOLANT PUMPS, MODIFICATION TO VOLUTE NOZZLES.
29 May 73, 6p DOCKET-50311-68

Descriptors: (*Salem-1 reactor, *Pumps), (*Salem-2 reactor, Pumps), Containment spray systems, Nozzles, Primary coolant circuits, Reactor licensing, Repair, Secondary coolant circuits.

For abstract, see NSA 28 05, number 12306.

DOCKET-50272-72/GA PC$3.00/MF$1.45
Public Service Electric and Gas CO., Newark, N.J.
SALEM NUCLEAR GENERATING STATION, UNIT 1. REACTOR COOLANT PUMP INTERNALS; NO. 11 RESIDUAL HEAT REMOVAL HEAT EXCHANGER, CONSTRUCTION SITE INFLICTED DAMAGE.
25 May 73, 6p

Descriptors: (*Salem-1 reactor, *Heat exchangers), Primary coolant circuits, Pumps, Reactor licensing, Repair.

For abstract, see NSA 28 05, number 12307.

DOCKET-50272-73/GA PC$10.35/MF$1.45
Public Service Electric and Gas CO., Newark, N.J.
SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2. LICENSE APPLICATION, AMENDMENT 23.
2 Jul 73, 164p DOCKET-50311-69

Descriptors: (*Salem-1 reactor, *Reactor safety), (*Salem-2 reactor, Reactor safety), Design, Electrical equipment, Environment, Radiation protection, Reactor cooling systems, Reactor licensing, Reactor operation, Reactor sites, Waste disposal.

For abstract, see NSA 28 06, number 14901.

DOCKET-50275-42/GA PC$3.00/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, RESPONSE TO COMMENTS BY DEPARTMENT OF THE INTERIOR AND STATE OF CALIFORNIA.
8 May 73, 20p DOCKET-50323-38

Descriptors: (*Diablo canyon-1 reactor, *Environment), (*Diablo canyon-2 reactor, Environment), Archaeology, Harbors, Reactor licensing, Silt, Wild animals.

For abstract, see NSA 28 04, number 10364.

DOCKET-50275-44/GA PC$27.50/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2. FINAL ENVIRONMENTAL STATEMENT.
May 73, 508p DOCKET-50323-40

Descriptors: (*Diablo canyon-1 reactor, *Environment), (*Diablo canyon-2 reactor, Environment), Cost benefit analysis, Geology, Meteorology, Reactor licensing, Reactor operation, Reactor safety, Reactor sites.

For abstract, see NSA 28 04, number 10365.

DOCKET-50275-45/GA PC$24.00/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2. MARINE ENVIRONMENT IN THE VICINITY OF DIABLO COVE WITH SPECIAL REFERENCE TO ABALONES AND BONY FISH.
13 Jun 73, 438p DOCKET-50323-44

Descriptors: (*Diablo canyon-1 reactor, *Environment), (*Diablo canyon-2 reactor, Environment), Aquatic ecosystems, Fishes, Reactor licensing, Thermal pollution, Waste disposal.

For abstract, see NSA 28 05, number 12308.

DOCKET-50275-46/GA PC$3.00/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
DIABLO CANYON NUCLEAR POWER PLANT, UNIT 1. THERMOPLASTIC INSULATION REPAIRED.
31 May 73, 3p

Descriptors: (*Diablo canyon-1 reactor, *Conductor devices), Dielectric materials, Electric conductors, Reactor licensing, Repair, Switches.

For abstract, see NSA 28 05, number 12309.

DOCKET-50277-100/GA PC$3.00/MF$1.45
Philadelphia Electric CO., PA.
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3. COMMENTS ON ACRS REVIEW.
31 May 73, 2p DOCKET-50278-88

Descriptors: (*Peach bottom-2 reactor, *Reactor safety), (*Peach bottom-3 reactor, Reactor safety), Combustion, Containment, Control elements, Failures, Gases, Reactor accidents, Reactor licensing, Scram, Transients.

For abstract, see NSA 28 05, number 12317.

DOCKET-50277-101/GA PC$6.25/MF$1.45
Philadelphia Electric CO., PA.
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 28.
15 Jun 73, 82p DOCKET-50278-89

Descriptors: (*Peach bottom-2 reactor, *Reactor safety), (*Peach bottom-3 reactor, Reactor safety), Environment, Quality assurance, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12318.

DOCKET-50277-93/GA PC$3.00/MF$1.45
Philadelphia Electric CO., PA.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 2. AEC DRO I LETTER DATED APRIL 12, 1973 AND REPORT 50-277/73-03; AEC DRO I LETTER DATED APRIL 12, 1973 AND REPORT 50-278/73-01.
21 May 73, 2p

Descriptors: (*Peach bottom-2 reactor, *Inspection), Pipelines, Pumps, Reactor licensing, Valves.

For abstract, see NSA 28 05, number 12310.

DOCKET-50277-94/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 2. INSPECTION REPORT 50-277/73-08.
3 May 73, 13p

Descriptors: (*Peach bottom-2 reactor, *Inspection), Education, Liquid wastes, Monitoring, Personnel, Quality assurance, Radiation protection, Reactor fueling, Reactor licensing, Solid wastes, Storage, Tanks.

For abstract, see NSA 28 05, number 12311.

DOCKET-50277-95/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 2. INSPECTION REPORT NO. 50-277/73-09.
21 May 73, 10p

Descriptors: (*Peach bottom-2 reactor, *Inspection), Containment, Leaks, Reactor licensing, Reactor operation, Testing.

For abstract, see NSA 28 05, number 12312.

DOCKET-50277-96/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 2. INSPECTION REPORT NO. 50-277/73-12.
9 May 73, 10p

Descriptors: (*Peach bottom-2 reactor, *Inspection), Diesel engines, Electric generators, Fabrication, Reactor licensing, Reactor operation, Relays, Testing, Valves.

For abstract, see NSA 28 05, number 12313.

DOCKET-50277-97/GA PC$3.00/MF$1.45
Philadelphia Electric CO., PA.
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 27.
22 May 73, 38p DOCKET-50278-86

Descriptors: (*Peach bottom-2 reactor, *Pipes), (*Peach bottom-3 reactor, Pipes), Containment, Reactor licensing, Reactor safety, Ruptures, Steam.

For abstract, see NSA 28 05, number 12314.

DOCKET-50277-98/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3. SAFETY EVALUATION, SUPPLEMENT 2.
23 May 73, 18p DOCKET-50278-87

Descriptors: (*Peach bottom-2 reactor, *Reactor safety), (*Peach bottom-3 reactor, Reactor safety), Containment, Control elements, Fuel densification, Pipes, Radioactive wastes, Reactor licensing, Ruptures, Scram, Transients.

For abstract, see NSA 28 05, number 12315.

DOCKET-50277-99/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 2. INSPECTION REPORT NO. 50-277/73-13.
18 May 73, 15p

Descriptors: (*Peach bottom-2 reactor, *Inspection), Control rod drives, Reactor licensing, Reactor operation, Reactor safety, Reactor shutdown, Specifications.

For abstract, see NSA 28 05, number 12316.

DOCKET-50278-85/GA PC$3.00/MF$1.45
Philadelphia Electric CO., PA.
PEACH BOTTOM ATOMIC POWER STATION, UNIT 3. DEFFICIENCY IN THE CORE SPRAY SPARGER.
11 May 73, 3p

Descriptors: (*Peach bottom-3 reactor, *Eccs), Cleaning, Defects, Dimensions, Reactor cores, Reactor licensing, Sprays, Welds.

For abstract, see NSA 28 04, number 10366.

DOCKET-50280-134/GA PC$3.00/MF$1.45
Atomic Energy Commission, Washington, D. C.
SURRY POWER STATION, UNITS 1 AND 2. NOTICE OF VIOLATION.
15 May 73, 18p DOCKET-50281-106

Descriptors: (*Surry-1 reactor, *Regulations), (*Surry-2 reactor, Regulations), Inspection, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10367.

DOCKET-50280-135/GA PC$3.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 1 AND 2. WATER TEMPERATURE MONITORING PROGRAM.
3 May 73, 3p DOCKET-50281-107

Descriptors: (*Surry-1 reactor, *Environment), (*Surry-2 reactor, Environment), Electric cables, Monitoring, Reactor licensing, Temperature measurement, Thermistors, Water.

For abstract, see NSA 28 04, number 10368.

DOCKET-50280-136/GA PC$5.50/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA.
SURRY POWER STATION, UNITS 1 AND 2. FUEL DENSIFICATION PRESSURE ANALYSIS.
Apr 73, 69p DOCKET-50281-108, WCAP-8117

Descriptors: (*Surry-1 reactor, *Fuel densification), (*Surry-2 reactor, Fuel densification), High pressure, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10369.

DOCKET-50280-137/GA PC$24.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 1 AND 2. PREOPERATIONAL SURVEILLANCE PROGRAM.
18 May 73, 437p DOCKET-50281-109

Descriptors: (*Surry-1 reactor, *Environment), (*Surry-2 reactor, Environment), Chlorine, Ecology, Ecosystems, Fishes, Molluscs, Oysters, Reactor licensing, Reactor operation, Shores, Thermal pollution.

For abstract, see NSA 28 04, number 10370.

DOCKET-50280-138/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
SURRY POWER STATION, UNITS 1, 2 AND 3. COOPERATIVE PROGRAM WITH THE COMMONWEALTH OF VIRGINIA FOR EFFLUENT AND ENVIRONMENTAL MONITORING.
30 May 73, 3p DOCKET-50281-110, DOCKET-50338-73

Descriptors: (*Surry-1 reactor, *Radiation monitoring), (*Surry-2 reactor, Radiation monitoring), (*Surry-3 reactor, Radiation monitoring), Environment, Radioactive wastes, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10371.

DOCKET-50280-139/GA PC$3.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNIT 1. REQUEST FOR EXTENSION OF TIME FOR SUBMITTAL OF REPORT.
6 Feb 73, 2p

Descriptors: (*Surry-1 reactor, *Pressurizers), Failures, Pipelines, Reactor licensing, Repair.

For abstract, see NSA 28 05, number 12319.

DOCKET-50280-140/GA PC$3.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNIT 1. AO-S1-72-09, ADDITIONAL INFORMATION.
23 May 73, 2p

Descriptors: (*Surry-1 reactor, *Valves), Failures, Industrial radiography, Reactor licensing, Testing.

For abstract, see NSA 28 05, number 12320.

DOCKET-50280-141/GA PC$5.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 1 AND 2. TECHNICAL SPECIFICATIONS, PROPOSED CHANGE 8.
4 Jun 73, 56p DOCKET-50281-111

Descriptors: (*Surry-1 reactor, *Fuel densification), (*Surry-2 reactor, Fuel densification), Fuel elements, Performance testing, Power, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12321.

DOCKET-50280-142/GA PC$3.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 1 AND 2. INCORE SURVEILLANCE PROGRAM.
5 Jun 73, 1p DOCKET-50281-112

Descriptors: (*Surry-1 reactor, *Power density), (*Surry-2 reactor, Power density), Fuel densification, In core instruments, Monitoring, Reactor cores, Reactor licensing.

For abstract, see NSA 28 05, number 12322.

DOCKET-50280-144/GA PC$4.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 1 AND 2. STEPS TAKEN TO CORRECT ITEMS IN VIOLATION WITH AEC REQUIREMENTS BROUGHT TO ATTENTION IN LETTER DATED MARCH 23, 1973.
9 Apr 73, 37p DOCKET-50281-113

Descriptors: (*Surry-1 reactor, *Inspection), (*Surry-2 reactor, Inspection), Pipelines, Quality assurance, Reactor licensing, Repair, Valves.

For abstract, see NSA 28 05, number 12324.

DOCKET-50280-145/GA PC$3.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNIT 1. AO-S1-73-07, FAILURE OF MAIN STEAM LINE VALVE TO CLOSE; FAILURE OF FEEDWATER CHECK VALVE.
8 Jun 73, 12p

Descriptors: (*Surry-1 reactor, *Valves), Failures, Reactor licensing, Reactor operation, Testing.

For abstract, see NSA 28 05, number 12325.

DOCKET-50280-146/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
SURRY POWER STATION, UNIT 1. AUTHORITY TO UTILIZE NORTH ANNA UNIT 1 COOLANT PUMP MOTOR AND FLYWHEEL AS REPLACEMENT.
11 Jun 73, 7p

Descriptors: (*Surry-1 reactor, *Pumps), Motors, North anna-1 reactor, Reactor cooling systems, Reactor licensing.

For abstract, see NSA 28 05, number 12326.

DOCKET-50281-105/GA PC$10.75/MF$1.45
Stone and Webster Engineering Corp., Boston, Mass.
SURRY POWER STATION, UNIT 2. STRUCTURAL ACCEPTANCE TEST, CONCRETE PRIMARY REACTOR CONTAINMENT.
11 May 73, 174p

Descriptors: (*Surry-2 reactor, *Containment buildings), Concretes, Reactor licensing, Reactor safety, Testing.

For abstract, see NSA 28 05, number 12327.

DOCKET-50281-114/GA PC$3.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNIT 2. FAILURE OF MOTOR-OPERATED VALVE TO OPEN AND TO CLOSE.
21 Jun 73, 2p

Descriptors: (*Surry-2 reactor, *Valves), Closures, Failures, Openings, Reactor licensing.

For abstract, see NSA 28 05, number 12328.

DOCKET-50281-115/GA PC$3.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNIT 2. REQUEST FOR A THIRTY-DAY EXTENSION ON SUBMITTAL OF STARTUP REPORT.
21 Jun 73, 1p

Descriptors: (*Surry-2 reactor, *Reactor start-up), Power, Reactor licensing, Reactor operation.

For abstract, see NSA 28 06, number 14902.

DOCKET-50282-117/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. RESTRAINT OF SAFETY INJECTION SYSTEM AND RESIDUAL HEAT REMOVAL PIPING DURING HOT FUNCTIONAL TESTING.
24 Apr 73, 3p DOCKET-50306-110

Descriptors: (*Prairie island-1 reactor, *Pipes), Reactor cooling systems, Spacers, Supports, Testing.

For abstract, see NSA 28 04, number 10372.

DOCKET-50282-118/GA PC$23.75/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. FINAL ENVIRONMENTAL REPORT.
May 73, 434p DOCKET-50306-111

Descriptors: (*Prairie island-1 reactor, *Environment), (*Prairie island-2 reactor, Environment), Cost benefit analysis, Radioactive wastes, Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 05, number 12329.

DOCKET-50282-119/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1. INSPECTION REPORT NO. 050-282/73-09.
7 May 73, 3p

Descriptors: (*Prairie island-1 reactor, *Security), Inspection, Reactor licensing.

For abstract, see NSA 28 04, number 10373.

DOCKET-50282-120/GA PC$3.25/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. INSPECTION RE-

PORTS NO. 050-282/73-06 AND NO. 050-306/73-03.
1 May 73, 24p DOCKET-50306-112

Descriptors: (*Prairie island-1 reactor, *Inspection), (*Prairie island-2 reactor, Inspection), Calibration, Electric cables, Lubricants, Pressure vessels, Pumps, Reactor fueling, Reactor instrumentation, Reactor licensing, Ultrasonic testing, Valves.

For abstract, see NSA 28 04, number 10374.

DOCKET-50282-121/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1. INSPECTION REPORT NO. 050-282/73-08.
3 May 73, 12p

Descriptors: (*Prairie island-1 reactor, *Inspection), Fuel assemblies, Pumps, Reactor cores, Reactor licensing, Testing, Valves.

For abstract, see NSA 28 04, number 10375.

DOCKET-50282-122/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. FUEL DENSIFICATION EFFECTS.
8 Jan 73, 1p DOCKET-50306-113

Descriptors: (*Prairie island-1 reactor, *Fuel densification), (*Prairie island-2 reactor, Fuel densification), Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12330.

DOCKET-50282-123/GA PC$5.75/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. SAFETY EVALUATION, SUPPLEMENT 3.
31 May 73, 74p DOCKET-50306-114

Descriptors: (*Prairie island-1 reactor, *Fuel densification), (*Prairie island-2 reactor, Fuel densification), Reactor licensing, Reactor operation, Reactor safety.

For abstract, see NSA 28 05, number 12331.

DOCKET-50282-124/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. REVIEW OF CONTROL CIRCUITS.
5 Jun 73, 1p DOCKET-50306-115

Descriptors: (*Prairie island-1 reactor, *Equipment protection devices), (*Prairie island-2 reactor, Equipment protection devices), Circuit breakers, Control systems, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12332.

DOCKET-50282-125/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1. INSPECTION REPORT NO. 050-282/73-12.
5 Jun 73, 11p

Descriptors: (*Prairie island-1 reactor, *Inspection), Buildings, Monitoring, Personnel, Protective clothing, Radiation protection, Radioactive wastes, Reactor fueling, Reactor licensing, Reactor operation, Ventilation, Waste management.

For abstract, see NSA 28 06, number 14903.

DOCKET-50282-126/GA PC$3.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. INTERIM REPORT OF DISC REPLACEMENT IN MAIN STEAM ISOLATION AND CHECK VALVES.
11 Jun 73, 2p DOCKET-50306-116

Descriptors: (*Prairie island-1 reactor, *Valves), (*Prairie island-2 reactor, Valves), Reactor licensing, Repair.

For abstract, see NSA 28 06, number 14904.

DOCKET-50282-129/GA PC$4.00/MF$1.45
Northern States Power CO., Minneapolis, Minn.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 35.
22 Jun 73, 38p DOCKET-50306-117

Descriptors: (*Prairie island-1 reactor, *Reactor safety), (*Prairie island-2 reactor, Reactor safety), Coolants, Flowmeters, Pipelines, Reactor licensing, Reactor operation, Reactor sites, Ruptures, Steam, Ventilation.

For abstract, see NSA 28 06, number 14905.

DOCKET-50282-130/GA PC$3.75/MF$1.45
Northern States Power CO., Minneapolis, Minn.
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2. MINNESOTA POLLUTION CONTROL AGENCY CERTIFICATION.
6 Jul 73, 31p DOCKET-50306-118

Descriptors: (*Prairie island-1 reactor, *Environment), (*Prairie island-2 reactor, Environment), Minnesota, Reactor licensing, Reactor operation, Regulations, Water pollution.

For abstract, see NSA 28 06, number 14906.

DOCKET-50285-87/GA PC$3.00/MF$1.45
Mutual Atomic Energy Liability Underwriters, New York (Usa).
FORT CALHOUN STATION, UNIT 1. MUTUAL ATOMIC ENERGY LIABILITY UNDERWRITERS POLICY NO. MF-63 HAS BEEN BOUND.
26 Mar 73, 1p

Descriptors: (*Calhoun-1 reactor, *Nuclear insurance), Liabilities, Reactor licensing.

For abstract, see NSA 28 04, number 10376.

DOCKET-50285-95/GA PC$13.75/MF$1.45
Omaha Public Power District, Nebr.
FORT CALHOUN STATION, UNIT 1. FACILITY OPERATING LICENSE, TECHNICAL SPECIFICATIONS, AND ENVIRONMENTAL TECHNICAL SPECIFICATIONS.
24 May 73, 234p

Descriptors: (*Calhoun-1 reactor, *Specifications), Environment, Radiation protection, Radioactive wastes, Reactor licensing.

For abstract, see NSA 28 05, number 12333.

DOCKET-50285-96/GA PC$3.00/MF$1.45
Omaha Public Power District, Nebr.
FORT CALHOUN STATION, UNIT 1. INDEMNITY AGREEMENT NO. B-67, AMENDMENT 1.
25 May 73, 3p

Descriptors: (*Calhoun-1 reactor, *Nuclear insurance), Liabilities, Reactor licensing.

For abstract, see NSA 28 05, number 12334.

DOCKET-50285-97/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Denver, Colo. Region IV.
FORT CALHOUN STATION, UNIT 1. INSPECTION REPORT NO. 50-285/73-07.
11 May 73, 13p

Descriptors: (*Calhoun-1 reactor, *Inspection), Calibration, Electric cables, Quality assurance, Reactor licensing, Reactor operation, Seismic effects, Valves.

For abstract, see NSA 28 05, number 12335.

DOCKET-50285-98/GA PC$3.00/MF$1.45
Omaha Public Power District, Nebr.
FORT CALHOUN STATION, UNIT 1. HIGH POWER TRIP/ DELTA T CIRCUIT.
26 Jun 73, 2p

Descriptors: (*Calhoun-1 reactor, *Electronic circuits), Electric power, Neutron flux, Reactor licensing, Reactor operation, Scram.

For abstract, see NSA 28 05, number 12336.

DOCKET-50285-99/GA PC$3.50/MF$1.45
Eberline Instrument Corp., Santa Fe, N. Mex. Dept. Of Nuclear Sciences.
FORT CALHOUN STATION, UNIT 1. PREOPERATIONAL ENVIRONMENTAL RADIOACTIVITY SURVEILLANCE PROGRAM, FIRST QUARTER, 1973.
29 Jun 73, 29p

Descriptors: (*Calhoun-1 reactor, *Environment), Air, Background radiation, Beta particles, Fishes, Gamma spectroscopy, Milk, Quality control, Radiation monitoring, Reactor operation, Silt, Surface waters.

For abstract, see NSA 28 06, number 14907.

DOCKET-50286-82/GA PC$5.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 3. APPLICATION FOR LICENSES, AMENDED AND SUBSTITUTED.
18 May 73, 60p

Descriptors: (*Indian point-3 reactor, *Reactor licensing), Legal aspects.

For abstract, see NSA 28 05, number 12337.

DOCKET-50286-83/GA PC$7.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 3. FINAL FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, SUPPLEMENT 11.
31 Jan 73, 99p

Descriptors: (*Indian point-3 reactor, *Reactor safety), Reactor licensing, Safety engineering, Testing.

For abstract, see NSA 28 05, number 12338.

DOCKET-50286-84/GA PC$4.50/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 3. ANALYSIS OF HIGH ENERGY LINES.
14 May 73, 48p

Descriptors: (*Indian point-3 reactor, *Reactor accidents), Pipes, Reactor licensing, Reactor safety, Ruptures.

For abstract, see NSA 28 05, number 12339.

DOCKET-50286-85/GA PC$3.00/MF$1.45
Department of the Interior, Washington, D.C. (Usa).

INDIAN POINT NUCLEAR GENERATING UNIT 3. ENVIRONMENTAL REPORT, SUPPLEMENTS NOS. 4 AND 5, COMMENTS OF U. S. DEPARTMENT OF THE INTERIOR.
10 May 73, 1p

Descriptors: (*Indian point-3 reactor, *Environment), Reactor cooling systems, Reactor licensing, Thermal pollution.

For abstract, see NSA 28 05, number 12340.

DOCKET-50286-86/GA PC$4.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 3. ACTION TAKEN TO CORRECT ITEMS OF VIOLATION BROUGHT TO ATTENTION FOLLOWING INSPECTION ON NOVEMBER 20, 21, 22; DECEMBER 1 AND DECEMBER 14, 1972.
7 Feb 73, 38p

Descriptors: (*Indian point-3 reactor, *Inspection), Electric cables, Motors, Pipes, Quality assurance, Reactor licensing, Seismic effects, Valves, Welding.

For abstract, see NSA 28 05, number 12341.

DOCKET-50286-87/GA PC$3.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 3. MODIFICATIONS TO BE INCORPORATED INTO RESIDUAL HEAT REMOVAL SYSTEM.
25 May 73, 2p

Descriptors: (*Indian point-3 reactor, *Valves), Eccs, Reactor cooling systems, Reactor licensing, Reactor safety.

For abstract, see NSA 28 05, number 12342.

DOCKET-50286-88/GA PC$8.00/MF$1.45
Consolidated Edison CO. Of New York, Inc., New York.
INDIAN POINT NUCLEAR GENERATING UNIT 3. FINAL FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, SUPPLEMENT 19.
Jun 73, 120p

Descriptors: (*Indian point-3 reactor, *Reactor safety), Containment buildings, Personnel, Reactor cooling systems, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12343.

DOCKET-50287-83/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
OCONEE NUCLEAR STATION, UNIT 3. INSPECTION REPORT NO. 50-287/73-1.
19 Jun 73, 16p

Descriptors: (*Oconee-3 reactor, *Inspection), Fabrication, Quality assurance, Reactor licensing.

For abstract, see NSA 28 05, number 12344.

DOCKET-50289-100/GA PC$4.25/MF$1.45
Metropolitan Edison CO., Reading, PA.
THREE MILE ISLAND NUCLEAR STATION, UNIT 1. ULTRASONIC INDICATIONS IN REACTOR COOLANT PIPING.
28 Mar 73, 43p

Descriptors: (*Three mile island-1 reactor, *Welded joints), Defects, Pipes, Reactor licensing.

For abstract, see NSA 28 04, number 10377.

DOCKET-50289-101/GA PC$3.00/MF$1.45
Metropolitan Edison CO., Reading, PA.
THREE MILE ISLAND NUCLEAR STATION, UNIT 1. OPERATING QUALITY ASSURANCE PROGRAM.
18 May 73, 3p

Descriptors: (*Three mile island-1 reactor, *Quality assurance), Quality control, Reactor licensing.

For abstract, see NSA 28 04, number 10378.

DOCKET-50289-102/GA PC$3.00/MF$1.45
Metropolitan Edison CO., Reading, PA.
THREE MILE ISLAND NUCLEAR STATION, UNIT 1. REVIEW OF CONTROL CIRCUITS OF SAFETY RELATED EQUIPMENT.
21 May 73, 7p

Descriptors: (*Three mile island-1 reactor, *Equipment protection devices), Control systems, Reactor licensing, Relays, Switches.

For abstract, see NSA 28 05, number 12345.

DOCKET-50289-103/GA PC$3.00/MF$1.45
Metropolitan Edison CO., Reading, PA.
THREE MILE ISLAND NUCLEAR STATION, UNITS 1 AND 2. FUEL DENSIFICATION EFFECTS.
28 Dec 72, 4p DOCKET-50320-48

Descriptors: (*Three mile island-1 reactor, *Fuel densification), (*Three mile island-2 reactor, Fuel densification), Comparative evaluations, Electric power, Oconee-1 reactor, Reactor licensing.

For abstract, see NSA 28 06, number 14908.

DOCKET-50289-104/GA PC$3.00/MF$1.45
Metropolitan Edison CO., Reading, PA.
THREE MILE ISLAND NUCLEAR STATION, UNIT 1. RIVER WATER INTAKE HOUSE SILTING.
11 Jun 73, 2p

Descriptors: (*Three mile island-1 reactor, *Buildings), Fabrication, Mechanical structures, Reactor licensing, Reactor sites, Silt, Water.

For abstract, see NSA 28 05, number 12346.

DOCKET-50289-105/GA PC$3.00/MF$1.45
Metropolitan Edison CO., Reading, PA.
THREE MILE ISLAND NUCLEAR STATION, UNIT 1. REACTOR VESSEL INTERNALS THERMAL SHIELD SCRATCHES.
4 Jun 73, 5p

Descriptors: (*Three mile island-1 reactor, *Thermal shields), Defects, Reactor cores, Reactor licensing, Supports.

For abstract, see NSA 28 06, number 14909.

DOCKET-50289-106/GA PC$3.00/MF$1.45
Metropolitan Edison CO., Reading, PA.
THREE MILE ISLAND NUCLEAR STATION, UNITS 1 AND 2. MAJOR COMPONENT WELD RECORDS.
13 Jun 73, 2p DOCKET-50320-49

Descriptors: (*Three mile island-1 reactor, *Welded joints), (*Three mile island-2 reactor, Welded joints), Closures, Documentation, Electrodes, Fabrication, Filler metals, Mechanical properties, Pressure vessels, Pressurizers, Steam generators.

For abstract, see NSA 28 06, number 14910.

DOCKET-50293-140/GA PC$3.00/MF$1.45
Boston Edison CO., Mass.
PILGRIM NUCLEAR POWER STATION. RESPONSE TO QUESTIONS 5 THROUGH 10 OF LETTER JANUARY 23, 1973.
15 May 73, 9p

Descriptors: (*Pilgrim reactor, *Reactor safety), Containment, Electronic equipment, Leaks, Loss of coolant, Reactor accidents, Reactor licensing, Specifications, Switches.

For abstract, see NSA 28 04, number 10379.

DOCKET-50293-141/GA PC$3.00/MF$1.45
Boston Edison CO., Mass.
PILGRIM NUCLEAR POWER STATION. UO-73-7, REACTOR BUILDING CLOSED COOLING WATER PUMP 202C TRIP.
22 May 73, 1p

Descriptors: (*Pilgrim reactor, *Pumps), Failures, Heaters, Reactor cooling systems, Reactor licensing.

For abstract, see NSA 28 04, number 10380.

DOCKET-50293-142/GA PC$3.00/MF$1.45
Boston Edison CO., Mass.
PILGRIM NUCLEAR POWER STATION. AO-73-16, DIFFERENTIAL PRESSURE INDICATING SWITCH FAILED TO CLOSE.
21 May 73, 2p

Descriptors: (*Pilgrim reactor, *Switches), Failures, Pumps, Reactor licensing.

For abstract, see NSA 28 04, number 10381.

DOCKET-50293-143/GA PC$3.75/MF$1.45
Boston Edison CO., Mass.
PILGRIM NUCLEAR POWER STATION. ATLANTIC MENHADEN MORTALITIES, APRIL 8--APRIL 24, 1973.
11 May 73, 32p

Descriptors: (*Pilgrim reactor, *Thermal effluents), Environment, Fishes, Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 04, number 10382.

DOCKET-50293-144/GA PC$3.00/MF$1.45
Boston Edison CO., Mass.
PILGRIM NUCLEAR POWER STATION. NELIA POLICY NF-188, ENDORSEMENTS NO. 13 AND NO. 14. MAELU POLICY NF-58, ENDORSEMENTS NO. 24 AND NO. 25.
30 Apr 73, 5p

Descriptors: (*Pilgrim reactor, *Nuclear insurance), Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10383.

DOCKET-50293-145/GA PC$3.00/MF$1.45
Boston Edison CO., Mass.
PILGRIM NUCLEAR POWER STATION. AO-73-17, DIFFERENTIAL PRESSURE INDICATING SWITCHES NOT OPERATING PROPERLY.
1 Jun 73, 2p

Descriptors: (*Pilgrim reactor, *Switches), Calibration, Failures, Reactor licensing.

For abstract, see NSA 28 05, number 12347.

DOCKET-50293-146/GA PC$3.50/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
PILGRIM NUCLEAR POWER STATION. INSPECTION REPORT NO. 50-293/73-02.
4 Jun 73, 30p

Descriptors: (*Pilgrim reactor, *Inspection), Documentation, Eccs, Failures, Monitoring, Personnel, Pumps, Reactor licensing, Reactor maintenance, Reactor safety, Stack disposal, Valves.

For abstract, see NSA 28 06, number 14911.

DOCKET-50293-147/GA PC$3.00/MF$1.45
Boston Edison CO., Mass.
PILGRIM NUCLEAR POWER STATION. AO-73-18, BARKSDALE PRESSURE SWITCH OUT OF CALIBRATION; AO-73-19, FENWAL TEMPERATURE SWITCHES OUT OF CALIBRATION.
19 Jun 73, 5p

Descriptors: (*Pilgrim reactor, *Switches), Calibration, Leak detectors, Reactor licensing, Steam, Temperature control.

For abstract, see NSA 28 06, number 14912.

DOCKET-50293-149/GA PC$3.00/MF$1.45
Boston Edison CO., Mass.
PILGRIM NUCLEAR POWER STATION. ABNORMAL OCCURRENCE 73-20: MALFUNCTION OF MINIATURE ACTUATION SWITCH.
27 Jun 73, 1p

Descriptors: (*Pilgrim reactor, *Switches), Defects, Failures, Pumps, Reactor licensing, Reactor operation.

For abstract, see NSA 28 06, number 14913.

DOCKET-50295-110/GA PC$3.25/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. INSPECTION REPORT NO. 050-295/73-16.
20 Apr 73, 22p

Descriptors: (*Zion-1 reactor, *Inspection), Accelerometers, Quality assurance, Reactor fueling, Reactor licensing, Reactor maintenance, Reactor operation, Reactor start-up, Standards, Testing, Valves.

For abstract, see NSA 28 04, number 10384.

DOCKET-50295-111/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. INSPECTION REPORT NO. 050-295/73-17.
23 Apr 73, 18p

Descriptors: (*Zion-1 reactor, *Inspection), Quality assurance, Reactor fueling, Reactor licensing, Reactor operation, Reactor start-up.

For abstract, see NSA 28 04, number 10385.

DOCKET-50295-114/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Zion, Ill. (Usa).
ZION STATION NUCLEAR POWER PLANT, UNIT 1. LOSS OF HIGH VOLTAGE POWER TO SOURCE RANGE MONITORS WHILE REACTOR WAS SHUTDOWN.
2 May 73, 4p

Descriptors: (*Zion-1 reactor, *Electrical equipment), Electric power, Losses, Monitoring, Reactor control systems, Reactor instrumentation, Reactor shutdown.

For abstract, see NSA 28 04, number 10386.

DOCKET-50295-117/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. REPORTABLE DEFICIENCY, MAIN STEAM CHECK VALVES.
27 Apr 73, 4p

Descriptors: (*Zion-1 reactor, *Valves), Closures, Cracks, Defects, Reactor licensing, Steam.

For abstract, see NSA 28 04, number 10387.

DOCKET-50295-118/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. STEPS TAKEN TO CORRECT ITEMS OF NONCOMPLIANCE BROUGHT TO ATTENTION FOLLOWING INSPECTION OF MARCH 7 AND 8, 1973.
4 May 73, 20p

Descriptors: (*Zion-1 reactor, *Inspection), Electric power, Quality assurance, Reactor licensing, Regulations, Us aec.

For abstract, see NSA 28 04, number 10388.

DOCKET-50295-119/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNITS 1 AND 2. MODIFICATIONS TO HEAT EXCHANGERS.
24 Apr 73, 3p DOCKET-50304-96

Descriptors: (*Zion-1 reactor, *Heat exchangers), (*Zion-2 reactor, Heat exchangers), Design, Mechanical vibrations, Reactor licensing, Spent fuels, Tubes.

For abstract, see NSA 28 04, number 10389.

DOCKET-50295-120/GA PC$3.00/MF$1.45
National Audubon Society, Owensboro, Ky. (Usa). Central Midwest Regional Office.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. FINAL ENVIRONMENTAL STATEMENT, COMMENTS OF NATIONAL AUDUBON SOCIETY, CENTRAL MIDWEST REGION.
15 May 73, 5p DOCKET-50304-97

Descriptors: (*Zion-1 reactor, *Environment), Aquatic ecosystems, Cost, Design, Electric power, Fishes, Reactor licensing, Reactor operation, Reactor sites, Shores.

For abstract, see NSA 28 05, number 12348.

DOCKET-50295-121/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Zion, Ill. (Usa).
ZION STATION NUCLEAR POWER PLANT, UNITS 1 AND 2. LOSS OF HIGH VOLTAGE POWER TO SOURCE RANGE MONITORS WHILE REACTOR WAS SHUTDOWN, DRAWING ON SECOND PAGE.
4 May 73, 2p DOCKET-50304-98

Descriptors: (*Zion-1 reactor, *Neutron detectors), (*Zion-2 reactor, Neutron detectors), Diagrams, Electric power, Reactor licensing.

For abstract, see NSA 28 05, number 12349.

DOCKET-50295-122/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. NUCLEAR MATERIALS SAFEGUARDS INSPECTION OF SPECIAL NUCLEAR MATERIAL.
31 Oct 72, 9p DOCKET-701302-1

Descriptors: (*Zion-1 reactor, *Nuclear materials management), Ceramics, Fuel pellets, Inspection, Reactor licensing, Reactor operation, Safeguards, Uranium dioxide.

For abstract, see NSA 28 04, number 10390.

DOCKET-50295-123/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. INSPECTION REPORT NO. 050-295/73-20.
15 May 73, 6p

Descriptors: (*Zion-1 reactor, *Inspection), Hospitals, Reactor licensing, Reactor safety.

For abstract, see NSA 28 04, number 10391.

DOCKET-50295-124/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. POTENTIAL DEGRADATION OF ONE OF THE CONTAINMENT BARRIERS.
24 May 73, 3p

Descriptors: (*Zion-1 reactor, *Containment shells), Leaks, Performance, Reactor licensing.

For abstract, see NSA 28 04, number 10392.

DOCKET-50295-125/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Zion, Ill. (Usa).
ZION STATION NUCLEAR POWER PLANT, UNIT 1. DISCHARGE OF BORIC ACID.
29 May 73, 5p

Descriptors: (*Zion-1 reactor, *Nonradioactive wastes), Boric acid, Environment, Lakes, Reactor licensing, Specifications, Waste disposal.

For abstract, see NSA 28 05, number 12350.

DOCKET-50295-126/GA PC$4.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. CONTAINMENT LINER INCIDENT.
1 Jun 73, 39p

Descriptors: (*Zion-1 reactor, *Containment shells), Failures, Leaks, Reactor licensing, Reactor operation, Reactor safety, Specifications.

For abstract, see NSA 28 05, number 12351.

DOCKET-50295-127/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Zion, Ill. (Usa).
ZION STATION NUCLEAR POWER PLANT, UNIT 1. LEAKING WELD.
9 Jun 73, 2p

Descriptors: (*Zion-1 reactor, *Welded joints), Borates, Failures, Leaks, Losses, Pipes, Reactor licensing, Valves, Water.

For abstract, see NSA 28 06, number 14914.

DOCKET-50295-129/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
ZION STATION NUCLEAR POWER PLANT, UNITS 1 AND 2. INSPECTION REPORTS 050-295/73-21 AND 050-304/73-06.
1 Jun 73, 7p DOCKET-50304-101

Descriptors: (*Zion-1 reactor, *Inspection), (*Zion-2 reactor, Inspection), Personnel, Quality assurance, Reactor licensing, Steam generators, Thickness, Valves.

For abstract, see NSA 28 05, number 12352.

DOCKET-50295-130/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. INSPECTION REPORT 050-295/73-23.
30 May 73, 12p

Descriptors: (*Zion-1 reactor, *Inspection), Monitoring, Quality assurance, Reactor licensing, Reactor operation, Reactor shutdown, Testing, Valves.

For abstract, see NSA 28 05, number 12353.

DOCKET-50295-131/GA PC$5.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. FINAL REPORT CONCERNING DEFLECTORS FOUND IN THE CONTAINMENT LINER.
14 Jun 73, 57p

Descriptors: (*Zion-1 reactor, *Containment shells), Reactor licensing, Reactor safety, Testing.

For abstract, see NSA 28 05, number 12354.

DOCKET-50295-132/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Zion, Ill. (Usa).
ZION STATION NUCLEAR POWER PLANT, UNIT 1. FAILURE OF SAFETY INJECTION PUMP 1A.
8 Jun 73, 1p

Descriptors: (*Zion-1 reactor, *Pumps), Failures, Reactor licensing, Reactor safety, Reactor start-up, Tanks.

For abstract, see NSA 28 05, number 12355.

DOCKET-50295-133/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Zion, Ill. (Usa).
ZION STATION NUCLEAR POWER PLANT, UNIT 1. SAFETY INJECTION SIGNAL OCCURRED.
18 Jun 73, 2p

Descriptors: (*Zion-1 reactor, *Fluid poison control), Boric acid, Pressurizers, Primary coolant circuits, Pumps, Reactor licensing, Reactor safety, Signals.

For abstract, see NSA 28 05, number 12356.

DOCKET-50295-134/GA PC$6.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNITS 1 AND 2. SPECIAL REPORT NO. 1, MAIN STEAM LINE CHECK VALVE MODIFICATIONS, SUPPLEMENT A.
21 Jun 73, 79p DOCKET-50304-102

Descriptors: (*Zion-1 reactor, *Valves), (*Zion-2 reactor, Valves), Design, Reactor licensing, Reactor operation, Steam.

For abstract, see NSA 28 05, number 12357.

DOCKET-50295-135/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNIT 1. COOLANT SYSTEM OVERPRESSURIZATION.
22 Jun 73, 2p

Descriptors: (*Zion-1 reactor, *Reactor cooling systems), High pressure, Reactor licensing, Reactor safety, Reactor shutdown, Repair, Valves.

For abstract, see NSA 28 05, number 12358.

DOCKET-50295-136/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNITS 1 AND 2. PROPOSED DESIGN FOR INTAKE STRUCTURE.
26 Jun 73, 20p DOCKET-50304-103

Descriptors: (*Zion-1 reactor, *Mechanical structures), (*Zion-2 reactor, Mechanical structures), Buildings, Coolants, Design, Environment, Fishes, Reactor cooling systems, Reactor licensing, Reactor sites.

For abstract, see NSA 28 05, number 12359.

DOCKET-50295-137/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Zion, Ill. (Usa).
ZION STATION NUCLEAR POWER PLANT, UNIT 1. LEAK IN WELD ON PUMP DISCHARGE RELIEF VALVE.
20 Jun 73, 2p

Descriptors: (*Zion-1 reactor, *Valves), Failures, Leaks, Mechanical vibrations, Pumps, Reactor licensing, Reactor shutdown, Welded joints.

For abstract, see NSA 28 06, number 14915.

DOCKET-50295-138/GA PC$3.25/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
ZION STATION NUCLEAR POWER PLANT, UNITS 1 AND 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 29.
21 Jun 73, 21p DOCKET-50304-104

Descriptors: (*Zion-1 reactor, *Reactor safety), (*Zion-2 reactor, Reactor safety), Pipes, Pumps, Reactor control systems, Reactor instrumentation, Ruptures.

For abstract, see NSA 28 06, number 14916.

DOCKET-50296-86/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
BROWNS FERRY NUCLEAR POWER STATION, UNIT 3. VENDOR INSPECTION REPORT NO. 50-296/73-1 (999-34).
8 Jun 73, 9p

Descriptors: (*Browns ferry-3 reactor, *Inspection), Fabrication, Industrial radiography, Nozzles, Reactor licensing, Welded joints.

For abstract, see NSA 28 06, number 14917.

DOCKET-50298-78/GA PC$6.75/MF$1.45
Nebraska Public Power District, Columbus.
COOPER NUCLEAR STATION. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 23.
10 May 73, 91p

Descriptors: (*Cooper reactor, *Environment), Reactor licensing, Reactor sites, Specifications.

For abstract, see NSA 28 04, number 10393.

DOCKET-50298-79/GA PC$3.75/MF$1.45
Nebraska Public Power District, Columbus.
COOPER NUCLEAR STATION. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 24.
11 May 73, 33p

Descriptors: (*Cooper reactor, *Reactor safety), Containment, Design, Fabrication, Fuel assemblies, Monitoring, Neutron flux, Reactor accidents, Reactor licensing.

For abstract, see NSA 28 04, number 10394.

DOCKET-50298-80/GA PC$14.50/MF$1.45
Nebraska Public Power District, Columbus.
COOPER NUCLEAR STATION. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 22.
10 May 73, 250p

Descriptors: (*Cooper reactor, *Reactor safety), Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12360.

DOCKET-50298-81/GA PC$6.75/MF$1.45
Nebraska Public Power District, Columbus.
COOPER NUCLEAR STATION. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 25.
8 Jun 73, 95p

Descriptors: (*Cooper reactor, *Pipelines), Containment, Reactor licensing, Ruptures.

For abstract, see NSA 28 06, number 14918.

DOCKET-50298-82/GA PC$4.75/MF$1.45
Nebraska Public Power District, Columbus.
COOPER NUCLEAR STATION. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 26.
9 Jul 73, 51p

Descriptors: (*Cooper reactor, *Reactor safety), Containment, Cranes, Neutron flux tilting, Reactor licensing.

For abstract, see NSA 28 06, number 14919.

DOCKET-50301-100/GA PC$4.00/MF$1.45
Wisconsin Electric Power CO., Milwaukee.
POINT BEACH NUCLEAR PLANT, UNIT 2. ALTERNATE TECHNIQUES TO REDUCE DISCHARGES OF DEMINERALIZER REGENERANT WASTE TO LAKE MICHIGAN.
29 Jun 73, 37p

Descriptors: (*Point beach-2 reactor, *Nonradioactive waste disposal), Cost benefit analysis, Demineralizers, Environment, Reactor licensing, Sulfates.

For abstract, see NSA 28 06, number 14920.

DOCKET-50302-73/GA PC$13.50/MF$1.45
Florida Power Corp., St. Petersburg.
CRYSTAL RIVER NUCLEAR GENERATING PLANT, UNIT 3. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 26.
18 May 73, 229p

Descriptors: (*Crystal river-3 reactor, *Reactor safety), Containment buildings, Electrical equipment, Environment, Meteorology, Radiation protection, Radioactive waste disposal, Reactor cooling systems, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10395.

DOCKET-50302-74/GA PC$3.00/MF$1.45
Florida Power Corp., St. Petersburg.
CRYSTAL RIVER NUCLEAR GENERATING PLANT, UNIT 3. NELIA POLICY NO. NF-195, DECLARATION PAGE AND ENDORSEMENTS 1 THROUGH 12.
9 May 73, 17p

Descriptors: (*Crystal river-3 reactor, *Nuclear insurance), Liabilities, Reactor licensing.

For abstract, see NSA 28 04, number 10396.

DOCKET-50302-75/GA PC$22.25/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
CRYSTAL RIVER NUCLEAR GENERATING PLANT, UNIT 3. FINAL ENVIRONMENTAL STATEMENT.
May 73, 404p

Descriptors: (*Crystal river-3 reactor, *Environment), Cost benefit analysis, Geology, Meteorology, Reactor licensing, Reactor operation, Reactor safety, Reactor sites.

For abstract, see NSA 28 04, number 10397.

DOCKET-50302-76/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.

CRYSTAL RIVER NUCLEAR GENERATING PLANT, UNIT 3. INSPECTION REPORT NO. 50-302/73-3.
30 May 73, 12p

Descriptors: (*Crystal river-3 reactor, *Inspection), Cleaning, Fabrication, Personnel, Pipes, Reactor licensing, Valves, Welding.

For abstract, see NSA 28 04, number 10398.

DOCKET-50302-77/GA PC$3.00/MF$1.45
Nuclear Energy Liability Insurance Association, New York (Usa).
CRYSTAL RIVER NUCLEAR GENERATING PLANT, UNIT 3. NELIA POLICY NF-195.
29 May 73, 1p

Descriptors: (*Crystal river-3 reactor, *Nuclear insurance), Liabilities, Reactor licensing.

For abstract, see NSA 28 06, number 14921.

DOCKET-50304-99/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
ZION STATION NUCLEAR POWER PLANT, UNIT 2. INSPECTION REPORT NO. 050-304/73-05.
14 May 73, 19p

Descriptors: (*Zion-2 reactor, *Inspection), Quality assurance, Reactor licensing, Steam generators, Valves.

For abstract, see NSA 28 04, number 10399.

DOCKET-50305-82/GA PC$4.00/MF$1.45
Wisconsin Public Service Corp., Green Bay.
KEWAUNEE NUCLEAR POWER PLANT. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 29.
15 May 73, 37p

Descriptors: (*Kewaunee reactor, *Reactor safety), Containment, Pipes, Pressure dependence, Reactor licensing, Ruptures.

For abstract, see NSA 28 05, number 12361.

DOCKET-50305-83/GA PC$5.75/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA.
KEWAUNEE NUCLEAR POWER PLANT. FUEL DENSIFICATION.
Mar 73, 75p WCAP-8093

Descriptors: (*Kewaunee reactor, *Fuel densification), Performance, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10400.

DOCKET-50305-84/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
KEWAUNEE NUCLEAR POWER PLANT. INSPECTION REPORT NO. 050-305/73-05.
9 May 73, 12p

Descriptors: (*Kewaunee reactor, *Inspection), Education, Personnel, Quality assurance, Reactor fueling, Reactor licensing, Reactor operation, Reactor safety.

For abstract, see NSA 28 04, number 10401.

DOCKET-50305-85/GA PC$3.00/MF$1.45
Wisconsin Public Service Corp., Green Bay.
KEWAUNEE NUCLEAR POWER PLANT. REVIEW OF CONTROL CIRCUIT DESIGNS.
1 Jun 73, 2p

Descriptors: (*Kewaunee reactor, *Equipment protection devices), Circuit breakers, Control systems, Reactor licensing, Specifications, Switches.

For abstract, see NSA 28 05, number 12362.

DOCKET-50305-86/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
KEWAUNEE NUCLEAR POWER PLANT. INSPECTION REPORT NO. 050-305/73-07.
6 Jun 73, 6p

Descriptors: (*Kewaunee reactor, *Inspection), Eccs, Heat transfer, Reactor licensing, Reactor operation, Reactor safety, Specifications, Testing.

For abstract, see NSA 28 05, number 12363.

DOCKET-50305-87/GA PC$3.75/MF$1.45
Wisconsin Public Service Corp., Green Bay.
KEWAUNEE NUCLEAR POWER PLANT. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 30.
15 Jun 73, 35p

Descriptors: (*Kewaunee reactor, *Specifications), Aquatic ecosystems, Environment, Management, Monitoring, Reactor licensing, Reactor safety, Sampling, Terrestrial ecosystems, Thermal pollution.

For abstract, see NSA 28 06, number 14922.

DOCKET-50309-113/GA PC$3.00/MF$1.45
Maine Yankee Atomic Power CO., Westboro, Mass.
MAINE YANKEE ATOMIC POWER STATION. OPERATIONAL DIFFICULTIES WITH CEA NO. 19.
10 Apr 73, 4p

Descriptors: (*Maine yankee reactor, *Control elements), Failures, Reactor licensing.

For abstract, see NSA 28 04, number 10402.

DOCKET-50309-115/GA PC$3.00/MF$1.45
Maine Yankee Atomic Power CO., Westboro, Mass.
MAINE YANKEE ATOMIC POWER STATION. MEASUREMENT OF INTAKE VELOCITY.
31 May 73, 19p

Descriptors: (*Maine yankee reactor, *Reactor cooling systems), Fluid flow, Reactor licensing, Velocity.

For abstract, see NSA 28 05, number 12364.

DOCKET-50309-116/GA PC$3.50/MF$1.45
Maine Yankee Atomic Power CO., Westboro, Mass.
MAINE YANKEE ATOMIC POWER STATION. MONTHLY REPORT 4-73, APRIL 1973.
8 Jun 73, 26p

Descriptors: (*Maine yankee reactor, *Reactor maintenance), Radioactive wastes, Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12365.

DOCKET-50312-75/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
RANCHO SECO NUCLEAR GENERATING STATION, UNIT 1. MINOR IMPERFECTIONS IN PIPE WELDS.
26 Apr 73, 2p

Descriptors: (*Rancho seco-1 reactor, *Pipe joints), Defects, Pipes, Reactor licensing.

For abstract, see NSA 28 04, number 10403.

DOCKET-50312-76/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Berkeley, Calif. (Usa). Region V.
RANCHO SECO NUCLEAR GENERATING STATION, UNIT 1. INSPECTION REPORT NO. 050-0312/73-02.
15 May 73, 15p

Descriptors: (*Rancho seco-1 reactor, *Inspection), Carbon steels, Paints, Pumps, Quality assurance, Reactor licensing, Steam generators, Switches, Valves, Welding.

For abstract, see NSA 28 04, number 10404.

DOCKET-50312-77/GA PC$3.00/MF$1.45
Sacramento Municipal Utility District, Calif.
RANCHO SECO NUCLEAR GENERATING STATION, UNIT 1. METEOROLOGICAL DATA COLLECTION SYSTEM.
31 May 73, 4p

Descriptors: (*Rancho seco-1 reactor, *Meteorology), Monitoring, Reactor licensing, Reactor sites.

For abstract, see NSA 28 05, number 12366.

DOCKET-50312-78/GA PC$14.25/MF$1.45
Sacramento Municipal Utility District, Calif.
RANCHO SECO NUCLEAR GENERATING STATION, UNIT 1. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 22.
4 Jun 73, 245p

Descriptors: (*Rancho seco-1 reactor, *Reactor safety), Equipment protection devices, Reactor licensing, Reactor operation, Safety engineering, Specifications.

For abstract, see NSA 28 05, number 12367.

DOCKET-50312-80/GA PC$11.00/MF$1.45
Sacramento Municipal Utility District, Calif.
RANCHO SECO NUCLEAR GENERATING STATION, UNIT 1. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 23.
22 Jun 73, 177p

Descriptors: (*Rancho seco-1 reactor, *Reactor safety), Design basis accidents, Earthquakes, Floods, Pipes, Reactor cores, Ruptures, Seismic effects.

For abstract, see NSA 28 06, number 14923.

DOCKET-50312-81/GA PC$11.50/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
RANCHO SECO NUCLEAR GENERATING STATION, UNIT 1. SAFETY EVALUATION.
8 Jun 73, 189p

Descriptors: (*Rancho seco-1 reactor, *Reactor safety), Cost, Design, Design basis accidents, Liabilities, Personnel, Radioactive wastes, Reactor licensing, Reactor sites, Waste disposal, Waste management.

For abstract, see NSA 28 06, number 14924.

DOCKET-50313-78/GA PC$4.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
ARKANSAS NUCLEAR ONE, UNIT 1. STEPS TAKEN TO CORRECT APPARENT VIOLATION BROUGHT TO ATTENTION FOLLOWING INSPECTION OF FEBRUARY 20--23, 1973.
29 May 73, 38p

Descriptors: (*Arkansas-1 reactor, *Inspection), Reactor licensing, Regulations, Us aec.

For abstract, see NSA 28 04, number 10405.

DOCKET-50313-79/GA PC$3.00/MF$1.45
Arkansas Power and Light CO., Little Rock.
ARKANSAS NUCLEAR ONE, UNIT 1. ELECTRICAL REVIEW.
11 May 73, 5p

Descriptors: (*Arkansas-1 reactor, *Electrical equipment), Cooling, Diesel engines, Eccs, Primary coolant circuits, Pumps, Reactor control systems, Reactor instrumentation, Reactor licensing, Steam generators.

For abstract, see NSA 28 04, number 10406.

DOCKET-50313-80/GA PC$3.00/MF$1.45
Arkansas Power and Light CO., Little Rock.
ARKANSAS NUCLEAR ONE, UNIT 1. EMERGENCY COOLING RESERVOIR.
11 May 73, 3p

Descriptors: (*Arkansas-1 reactor, *Water reservoirs), Design, Reactor cooling systems, Reactor licensing.

For abstract, see NSA 28 04, number 10407.

DOCKET-50313-81/GA PC$3.00/MF$1.45
Arkansas Power and Light CO., Little Rock.
ARKANSAS NUCLEAR ONE, UNIT 1. LEAK NEAR A SHOP WELD.
6 Jun 73, 2p

Descriptors: (*Arkansas-1 reactor, *Pipelines), Leaks, Reactor licensing, Sprays, Testing, Welded joints.

For abstract, see NSA 28 04, number 10408.

DOCKET-50313-82/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
ARKANSAS NUCLEAR ONE, UNIT 1. INQUIRY REPORT NO. 50-313/73-2Q, MOTOR CONTROL CENTER, REVERSING STARTER.
23 May 73, 5p

Descriptors: (*Arkansas-1 reactor, *Motors), Electrical equipment, Operation, Reactor licensing, Tolerances.

For abstract, see NSA 28 04, number 10409.

DOCKET-50313-83/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
ARKANSAS NUCLEAR ONE, UNIT 1. ORDER EXTENDING COMPLETION DATE TO JANUARY 1, 1974.
4 Jun 73, 3p

Descriptors: (*Arkansas-1 reactor, *Fabrication), Reactor licensing.

For abstract, see NSA 28 05, number 12368.

DOCKET-50313-84/GA PC$14.50/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
ARKANSAS NUCLEAR ONE, UNIT 1. SAFETY EVALUATION.
6 Jun 73, 250p

Descriptors: (*Arkansas-1 reactor, *Reactor safety), Design, Eccs, Electric power, Quality assurance, Radiation protection, Radioactive wastes, Reactor control systems, Reactor cooling systems, Reactor instrumentation, Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 04, number 10410.

DOCKET-50313-85/GA PC$5.50/MF$1.45
Arkansas Power and Light CO., Little Rock.
ARKANSAS NUCLEAR ONE, UNIT 1. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 39.
20 Jun 73, 70p

Descriptors: (*Arkansas-1 reactor, *Reactor safety), Fabrication, Personnel, Planning, Reactor accidents, Reactor licensing, Scram.

For abstract, see NSA 28 06, number 14925.

DOCKET-50313-86/GA PC$9.50/MF$1.45
Arkansas Power and Light CO., Little Rock.
ARKANSAS NUCLEAR ONE, UNIT 1. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 38.
15 Jun 73, 149p

Descriptors: (*Arkansas-1 reactor, *Reactor safety), Containment, Control rod drives, Cooling, Diesel engines, Electric generators, Fuels, Lakes, Monitoring, Personnel, Pipes, Reactor cooling systems, Reactor licensing, Remote handling, Ruptures, Seismic effects, Valves.

For abstract, see NSA 28 06, number 14926.

DOCKET-50315-118/GA PC$3.00/MF$1.45
American Electric Power Service Corp., New York.
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2. FAULTY OVERCURRENT TRIP DELAY DEVICE IN CIRCUIT BREAKERS FOR ENGINEERED SAFETY SYSTEMS.
16 Mar 73, 1p DOCKET-50316-117

Descriptors: (*Cook-1 reactor, *Circuit breakers), (*Cook-2 reactor, Circuit breakers), Equipment protection devices, Failures, Reactor licensing.

For abstract, see NSA 28 04, number 10411.

DOCKET-50315-119/GA PC$16.25/MF$1.45
Michigan Univ., Ann Arbor. Great Lakes Research Div.
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2. BENTON HARBOR POWER PLANT LIMNOLOGICAL STUDIES. PART XIII. COOK PLANT PREOPERATIONAL STUDIES, 1972.
Mar 73, 285p DOCKET-50316-118

Descriptors: (*Cook-1 reactor, *Aquatic ecosystems), (*Cook-2 reactor, Aquatic ecosystems), Environment, Fresh water, Hydrosphere, Lakes, Reactor licensing.

For abstract, see NSA 28 05, number 12369.

DOCKET-50315-120/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
DONALD C. COOK NUCLEAR PLANT, UNIT 1. INSPECTION REPORT NO. 050-315/73-04.
2 May 73, 7p

Descriptors: (*Cook-1 reactor, *Inspection), Cleaning, Education, Electrical equipment, Personnel, Pipes, Quality assurance, Reactor licensing, Reactor start-up, Specifications, Testing, Valves.

For abstract, see NSA 28 04, number 10412.

DOCKET-50315-121/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
DONALD C. COOK NUCLEAR PLANT, UNIT 1. INSPECTION REPORT NO. 050-315/73-03.
3 May 73, 15p

Descriptors: (*Cook-1 reactor, *Inspection), Fabrication, Heat exchangers, Reactor licensing, Seismic effects, Thickness, Valves.

For abstract, see NSA 28 04, number 10413.

DOCKET-50315-122/GA PC$3.00/MF$1.45
Indiana and Michigan Power CO., New York.
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2. FUEL DENSIFICATION EFFECTS.
3 Jan 73, 2p DOCKET-50316-119

Descriptors: (*Cook-1 reactor, *Fuel densification), (*Cook-2 reactor, Fuel densification), Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10414.

DOCKET-50315-123/GA PC$4.25/MF$1.45
Indiana and Michigan Power CO., New York. Indiana and Michigan Electric CO., New York.
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 43.
22 May 73, 45p DOCKET-50316-120

Descriptors: (*Cook-1 reactor, *Reactor safety), (*Cook-2 reactor, Reactor safety), Equipment protection devices, Mechanical structures, Reactor licensing, Reactor operation, Seismic effects, Stresses.

For abstract, see NSA 28 05, number 12370.

DOCKET-50315-124/GA PC$3.00/MF$1.45
American Electric Power Service Corp., New York.
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2. TREATMENT OF STEAM GENERATOR BLOWDOWN VAPOR.
25 May 73, 11p DOCKET-50316-121

Descriptors: (*Cook-1 reactor, *Steam generators), (*Cook-2 reactor, Steam generators), Blowdown, Cesium, Coolants, Demineralizers, Radioactivity, Steam condensers, Vapors.

For abstract, see NSA 28 05, number 12371.

DOCKET-50315-125/GA PC$11.25/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA. Pwr Systems Div.
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 44.
4 Jun 73, 185p DOCKET-50316-122

Descriptors: (*Cook-1 reactor, *Reactor safety), (*Cook-2 reactor, Reactor safety), Pipes, Reactor accidents, Reactor licensing, Ruptures.

For abstract, see NSA 28 05, number 12372.

DOCKET-50315-127/GA PC$6.50/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA.
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2. FUEL DENSIFICATION.
Jun 73, 90p DOCKET-50316-124, WCAP-8165

Descriptors: (*Cook-1 reactor, *Fuel densification), (*Cook-2 reactor, Fuel densification), Creep, Electric power, Fuel cans, Fuel pellets, Loss of coolant, Performance, Reactor accidents, Reactor cores, Reactor licensing, Reactor operation, Reactor safety, Shrinkage, Transients, Uranium dioxide.

For abstract, see NSA 28 06, number 14927.

DOCKET-50317-102/GA PC$3.00/MF$1.45
Baltimore Gas and Electric CO., MD.
CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2. VERTICAL AND HORIZONTAL SEPARATION OF REDUNDANT ELECTRICAL SAFEGUARD CHANNELS.
23 Apr 73, 5p DOCKET-50318-97

Descriptors: (*Calvert cliffs-1 reactor, *Electric cables), (*Calvert cliffs-2 reactor, Electric cables), Reactor licensing.

For abstract, see NSA 28 04, number 10415.

DOCKET-50317-103/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 1. INSPECTION REPORT NO. 50-317/73-07.
8 May 73, 10p

Descriptors: (*Calvert cliffs-1 reactor, *Inspection), Concretes, Containment, Fabrication, Reactor licensing, Repair, Testing.

For abstract, see NSA 28 04, number 10416.

DOCKET-50320-50/GA PC$3.00/MF$1.45
Metropolitan Edison CO., Reading, PA.
THREE MILE ISLAND NUCLEAR STATION, UNIT 2. WATER IN REACTOR PRESSURE VESSEL.
11 Jun 73, 3p

Descriptors: (*Three mile island-2 reactor, *Pressure vessels), Chlorides, Closures, Contamination, Leaks, Openings, Rain, Reactor licensing, Water.

For abstract, see NSA 28 05, number 12373.

DOCKET-50321-80/GA PC$3.00/MF$1.45
Georgia Power CO., Atlanta.
EDWIN I. HATCH NUCLEAR PLANT, UNIT 1. SHRINKAGE OF THE SHOTCRETE GROUT AND WELDING OF THE REBAR.
11 May 73, 2p

Descriptors: (*Hatch-1 reactor, *Biological shields), Concretes, Reactor licensing, Shrinkage, Welded joints.

For abstract, see NSA 28 04, number 10417.

DOCKET-50321-81/GA PC$6.00/MF$1.45
Georgia Power CO., Atlanta.
EDWIN I. HATCH NUCLEAR PLANT, UNIT 1. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 33.
9 May 73, 79p

Descriptors: (*Hatch-1 reactor, *Reactor safety), Electrical equipment, Quality assurance, Reactor control systems, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10418.

DOCKET-50321-82/GA PC$14.75/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
EDWIN I. HATCH NUCLEAR PLANT, UNIT 1. SAFETY EVALUATION.
11 May 73, 255p

Descriptors: (*Hatch-1 reactor, *Reactor safety), Legal aspects, Radioactive wastes, Reactor control systems, Reactor cooling systems, Reactor instrumentation, Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 05, number 12374.

DOCKET-50321-83/GA PC$5.25/MF$1.45
Georgia Power CO., Atlanta.
EDWIN I. HATCH NUCLEAR PLANT, UNIT 1. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 34.
1 Jun 73, 62p

Descriptors: (*Hatch-1 reactor, *Reactor safety), Quality assurance, Reactor kinetics, Reactor licensing.

For abstract, see NSA 28 05, number 12375.

DOCKET-50321-84/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
EDWIN I. HATCH NUCLEAR PLANT, UNIT 1. INSPECTION REPORT 50-321/73-4.
21 Jun 73, 18p

Descriptors: (*Hatch-1 reactor, *Inspection), Cleaning, Fabrication, Failures, Heat transfer, Nozzles, Personnel, Pipes, Pumps, Reactor licensing, Scram, Supports, Valves, Welding.

For abstract, see NSA 28 06, number 14928.

DOCKET-50321-85/GA PC$6.75/MF$1.45
Georgia Power CO., Atlanta.
EDWIN I. HATCH NUCLEAR PLANT, UNIT 1. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 35.
27 Jun 73, 94p

Descriptors: (*Hatch-1 reactor, *Reactor safety), Environment, Nonradioactive wastes, Radiation detectors, Radiation monitoring, Radioactive wastes, Reactor licensing, Stack disposal.

For abstract, see NSA 28 06, number 14929.

DOCKET-50323-41/GA PC$3.25/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
DIABLO CANYON NUCLEAR POWER PLANT, UNIT 2. STEPS TAKEN TO CORRECT ITEMS BROUGHT TO ATTENTION IN LETTER DATED APRIL 2, 1973.
25 Apr 73, 25p

Descriptors: (*Diablo canyon-2 reactor, *Valves), Fabrication, Quality control, Reactor licensing, Steam generators, Welding.

For abstract, see NSA 28 05, number 12376.

DOCKET-50323-42/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Berkeley, Calif. (Usa). Region V.
DIABLO CANYON NUCLEAR POWER PLANT, UNIT 2. INSPECTION REPORT NO. 050-0323/73-01.
2 May 73, 12p

Descriptors: (*Diablo canyon-2 reactor, *Inspection), Containment buildings, Fabrication, Pipelines, Quality assurance, Reactor licensing.

For abstract, see NSA 28 05, number 12377.

DOCKET-50323-43/GA PC$3.00/MF$1.45
Pacific Gas and Electric CO., San Francisco, Calif.
DIABLO CANYON NUCLEAR POWER PLANT, UNIT 2. STEPS TAKEN TO CORRECT ITEMS BROUGHT TO ATTENTION IN LETTER DATED MARCH 22, 1973.
25 Apr 73, 19p

Descriptors: (*Diablo canyon-2 reactor, *Pipes), Quality assurance, Reactor licensing, Welded joints.

For abstract, see NSA 28 05, number 12378.

DOCKET-50324-80/GA PC$3.00/MF$1.45
Department of Justice, Washington, D.C. Antitrust Div.
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2. REQUEST FOR ANTITRUST INFORMATION, UNITED STATES DEPARTMENT OF JUSTICE.
29 Jan 73, 2p DOCKET-50325-81

Descriptors: (*Brunswick-1 reactor, *Legal aspects), (*Brunswick-2 reactor, Legal aspects), Electric power, Reactor licensing.

For abstract, see NSA 28 04, number 10419.

DOCKET-50324-81/GA PC$19.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 18.
21 May 73, 337p DOCKET-50325-82

Descriptors: (*Brunswick-1 reactor, *Reactor safety), (*Brunswick-2 reactor, Reactor safety), Personnel, Radiation monitoring, Reactor cooling systems, Reactor licensing, Specifications, Testing.

For abstract, see NSA 28 05, number 12379.

DOCKET-50324-82/GA PC$3.50/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1. INSPECTION REPORT NO. 50-324/73-3.
22 May 73, 26p

Descriptors: (*Brunswick-1 reactor, *Inspection), Nondestructive testing, Personnel, Pipe joints, Quality assurance, Reactor licensing, Valves, Welding.

For abstract, see NSA 28 05, number 12380.

DOCKET-50324-83/GA PC$15.25/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT.
Jun 73, 264p DOCKET-50325-83

Descriptors: (*Brunswick-1 reactor, *Environment), (*Brunswick-2 reactor, Environment), Cost benefit analysis, Electric power, Fishes, Radioactive wastes, Reactor licensing, Reactor sites.

For abstract, see NSA 28 05, number 12381.

DOCKET-50324-84/GA PC$21.75/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 19.
3 Jul 73, 394p DOCKET-50325-84

Descriptors: (*Brunswick-1 reactor, *Reactor safety), (*Brunswick-2 reactor, Reactor safety), Design, Electric power, Equipment protection devices, Power, Reactor control systems, Reactor cooling systems, Reactor licensing, Reactor operation, Reactor sites, Steam, Testing.

For abstract, see NSA 28 06, number 14930.

DOCKET-50324-85/GA PC$5.25/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2. ENVIRONMENTAL REPORT, AMENDMENT 7.
9 Jul 73, 62p DOCKET-50325-85

Descriptors: (*Brunswick-1 reactor, *Environment), (*Brunswick-2 reactor, Environment), Cost benefit analysis, Reactor licensing, Reactor sites.

For abstract, see NSA 28 06, number 14931.

DOCKET-50329-37/GA PC$3.00/MF$1.45
Consumers Power CO., Jackson, Mich.
MIDLAND PLANT, UNITS 1 AND 2. LIMITORQUE VALVE OPERATORS.
21 Feb 73, 1p DOCKET-50330-36

Descriptors: (*Midland-1 reactor, *Valves), (*Midland-2 reactor, Valves), Operation, Reactor licensing.

For abstract, see NSA 28 04, number 10420.

DOCKET-50329-41/GA PC$16.25/MF$1.45
Consumers Power CO., Jackson, Mich.
MIDLAND PLANT, UNITS 1 AND 2. APPLICATION FOR CONSTRUCTION PERMIT AND OPERATING LICENSE, AMENDMENT 10.
28 Apr 73, 285p DOCKET-50330-40

Descriptors: (*Midland-1 reactor, *Reactor licensing), (*Midland-2 reactor, Reactor licensing), Brines, Design, Fabrication, Hydrology, Meteorology, Monitoring, Reactor operation, Salts, Seismic effects.

For abstract, see NSA 28 06, number 14932.

DOCKET-50331-100/GA PC$3.25/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
DUANE ARNOLD ENERGY CENTER. STEPS TAKEN TO CORRECT ITEMS OF NONCOMPLIANCE BROUGHT TO ATTENTION IN LETTER DATED APRIL 6, 1973.
29 May 73, 24p

Descriptors: (*Duane arnold-1 reactor, *Welded joints), Bending, Electric cables, Fabrication, Inspection, Pipes, Reactor licensing, Stainless steels, Standards, Valves.

For abstract, see NSA 28 05, number 12383.

DOCKET-50331-101/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
DUANE ARNOLD ENERGY CENTER. INSPECTION REPORT NO. 050-331/73-06.
4 Jun 73, 17p

Descriptors: (*Duane arnold-1 reactor, *Inspection), Design, Education, Fabrication, Floods, Leaks, Personnel, Pressure vessels, Quality assurance, Reactor licensing, Reactor operation, Testing.

For abstract, see NSA 28 05, number 12384.

DOCKET-50331-95/GA PC$3.00/MF$1.45
Iowa Electric Light and Power CO., Cedar Rapids.
DUANE ARNOLD ENERGY CENTER. CERTIFICATION OF STATE OF IOWA, DEPARTMENT OF ENVIRONMENTAL QUALITY.
27 Apr 73, 3p

Descriptors: (*Duane arnold-1 reactor, *Environment), Iowa, Nonradioactive wastes, Radioactive wastes, Reactor licensing, Reactor safety, Waste disposal, Water, Water pollution.

For abstract, see NSA 28 06, number 14933.

DOCKET-50331-98/GA PC$3.00/MF$1.45
Iowa Electric Light and Power CO., Cedar Rapids.
DUANE ARNOLD ENERGY CENTER. NELIA POLICY NF-214.
4 May 73, 1p

Descriptors: (*Duane arnold-1 reactor, *Nuclear insurance), Accidents, Reactor accidents, Reactor licensing.

For abstract, see NSA 28 04, number 10425.

DOCKET-50331-99/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
DUANE ARNOLD ENERGY CENTER. INSPECTION REPORT NO. 050-331/73-04.
7 May 73, 16p

Descriptors: (*Duane arnold-1 reactor, *Inspection), Calibration, Circuit breakers, Defects, Electrical equipment, Pressure vessels, Pumps, Quality assurance, Reactor instrumentation, Reactor licensing, Valves.

For abstract, see NSA 28 05, number 12382.

DOCKET-50333-100/GA PC$6.25/MF$1.45
Power Authority of the State of New York.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. FINAL SAFETY ANALYSIS REPORT, SUPPLEMENT 22.
21 Jun 73, 82p

Descriptors: (*Fitzpatrick reactor, *Reactor safety), Education, Management, Personnel, Reactor accidents, Reactor control systems, Reactor licensing, Regulations.

For abstract, see NSA 28 06, number 14935.

DOCKET-50333-101/GA PC$12.25/MF$1.45
Power Authority of the State of New York.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 24, SUPPLEMENT 23.
28 Jun 73, 204p

Descriptors: (*Fitzpatrick reactor, *Reactor safety), Alarm systems, Containment, Control elements, Control rod drives, Coupling, Diesel engines, Documentation, Electric batteries, Electric generators, Environment, Filters, Heat transfer, Monitoring, Pipelines, Reactivity, Reactor licensing, Reactor operation, Ruptures, Scram.

For abstract, see NSA 28 06, number 14936.

DOCKET-50333-93/GA PC$16.00/MF$1.45
Power Authority of the State of New York.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. FINAL SAFETY ANALYSIS REPORT, SUPPLEMENT 20.
14 May 73, 279p

Descriptors: (*Fitzpatrick reactor, *Reactor safety), Quality assurance, Radioactive wastes, Reactor control systems, Reactor cooling systems, Reactor instrumentation, Reactor licensing.

For abstract, see NSA 28 05, number 12385.

DOCKET-50333-94/GA PC$3.00/MF$1.45
Power Authority of the State of New York.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. REVISED OPERATING PRESSURE AND TEMPERATURE LIMITS.
13 Oct 72, 2p

Descriptors: (*Fitzpatrick reactor, *Pressure vessels), Pressure dependence, Reactor licensing, Specifications, Temperature dependence.

For abstract, see NSA 28 04, number 10426.

DOCKET-50333-95/GA PC$3.00/MF$1.45
Power Authority of the State of New York.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. REACTOR VESSEL HEAD INCIDENT.
12 Apr 73, 5p

Descriptors: (*Fitzpatrick reactor, *Pressure vessels), Closures, Reactor licensing, Testing.

For abstract, see NSA 28 04, number 10427.

DOCKET-50333-96/GA PC$21.50/MF$1.45
Power Authority of the State of New York. Niagara Mohawk Power Corp., Lycoming, N.Y.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 21.
25 May 73, 389p

Descriptors: (*Fitzpatrick reactor, *Specifications), Reactor licensing, Reactor safety.

For abstract, see NSA 28 04, number 10428.

DOCKET-50333-97/GA PC$3.00/MF$1.45
Environmental Protection Agency, New York (Usa).
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. FINAL ENVIRONMENTAL STATEMENT, COMMENTS OF UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
25 May 73, 3p

Descriptors: (*Fitzpatrick reactor, *Environment), Gaseous wastes, Radioactive wastes, Reactor licensing, Stack disposal, Thermal pollution, Waste management, Water.

For abstract, see NSA 28 05, number 12386.

DOCKET-50333-98/GA PC$3.00/MF$1.45
New York State Dept. Of Environmental Conservation, Albany, N.Y.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. WATER CERTIFICATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
1 Jun 73, 2p

Descriptors: (*Fitzpatrick reactor, *Environment), Aquatic ecosystems, Fishes, Monitoring, Nonradioactive wastes, Radioactive wastes, Reactor licensing, Thermal pollution.

For abstract, see NSA 28 05, number 12387.

DOCKET-50333-99/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
JAMES A. FITZPATRICK NUCLEAR POWER PLANT. INSPECTION REPORT NO. 50-333/73-04.
23 Apr 73, 13p

Descriptors: (*Fitzpatrick reactor, *Inspection), Control, Documentation, Education, Management, Monitoring, Reactor licensing, Reactor maintenance, Reactor operation, Regulations, Reviews.

For abstract, see NSA 28 06, number 14934.

DOCKET-50334-61/GA PC$3.00/MF$1.45
Department of Transportation, Washington, D.C.
BEAVER VALLEY POWER STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DEPARTMENT OF TRANSPORTATION, UNITED STATES COAST GUARD.
27 Apr 73, 2p

Descriptors: (*Beaver valley-1 reactor, *Nonradioactive wastes), Chloramines, Chlorine, Environment, Liquid wastes, Monitoring, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10429.

DOCKET-50334-62/GA PC$3.00/MF$1.45
Office of the Assistant Secretary of Commerce, Washington, D.C. (Usa).
BEAVER VALLEY POWER STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ASSISTANT SECRETARY OF COMMERCE.
2 May 73, 1p

Descriptors: (*Beaver valley-1 reactor, *Environment), Gaseous wastes, Radioactive wastes, Rare gases, Reactor licensing, Storage, Tanks, Waste management.

For abstract, see NSA 28 06, number 14937.

DOCKET-50334-65/GA PC$3.00/MF$1.45
Department of Agriculture, Washington, D.C.
BEAVER VALLEY POWER STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT,

COMMENTS OF SOIL CONSERVATION SERVICE AND FOREST SERVICE.
7 May 73, 3p

Descriptors: (*Beaver valley-1 reactor, *Reactor sites), Environment, Reactor licensing, Soils, Water.

For abstract, see NSA 28 04, number 10430.

DOCKET-50334-67/GA PC$3.00/MF$1.45
Department of Housing and Urban Development, Pittsburgh, PA. (Usa). Pittsburgh Area Office.
BEAVER VALLEY POWER STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF PITTSBURGH AREA OFFICE OF THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.
9 May 73, 2p DOCKET-50412-10

Descriptors: (*Beaver valley-1 reactor, *Environment), (*Beaver valley-2 reactor, Environment), Cooling towers, Nonradioactive wastes, Personnel, Radioactive wastes, Reactor licensing, Reactor sites, Waste disposal.

For abstract, see NSA 28 05, number 12388.

DOCKET-50334-68/GA PC$3.00/MF$1.45
Pennsylvania Office of State Planning and Development, Harrisburg (Usa).
BEAVER VALLEY POWER STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF PENNSYLVANIA STATE AGENCIES.
14 May 73, 9p DOCKET-50412-11

Descriptors: (*Beaver valley-1 reactor, *Environment), (*Beaver valley-2 reactor, Environment), Archaeology, Geology, Monitoring, Reactor licensing, Reactor sites, Terrestrial ecosystems.

For abstract, see NSA 28 05, number 12389.

DOCKET-50334-69/GA PC$3.00/MF$1.45
Federal Power Commission, Washington, D.C. Bureau of Power.
BEAVER VALLEY POWER STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL POWER COMMISSION.
16 May 73, 5p

Descriptors: (*Beaver valley-1 reactor, *Environment), Electric power, Reactor licensing.

For abstract, see NSA 28 04, number 10431.

DOCKET-50334-70/GA PC$3.00/MF$1.45
Pennsylvania Office of State Planning and Development, Harrisburg (Usa).
BEAVER VALLEY POWER STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES.
21 May 73, 9p

Descriptors: (*Beaver valley-1 reactor, *Environment), Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12390.

DOCKET-50334-71/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
BEAVER VALLEY POWER STATION, UNIT 1. INSPECTION REPORT NO. 50-334/73-04.
3 May 73, 9p

Descriptors: (*Beaver valley-1 reactor, *Inspection), Quality assurance, Reactor licensing, Specifications, Standards, Tanks, Welded joints, Welding.

For abstract, see NSA 28 05, number 12391.

DOCKET-50334-72/GA PC$3.00/MF$1.45
Department of the Interior, Washington, D.C. (Usa).
BEAVER VALLEY POWER STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF UNITED STATES DEPARTMENT OF THE INTERIOR.
1 Jun 73, 6p

Descriptors: (*Beaver valley-1 reactor, *Environment), Archaeology, Ecology, Power transmission, Radioactive wastes, Reactor licensing, Solid wastes, Thermal pollution.

For abstract, see NSA 28 05, number 12392.

DOCKET-50334-73/GA PC$3.00/MF$1.45
Advisory Council on Historic Preservation, Washington, D.C. (Usa).
BEAVER VALLEY POWER STATION, UNIT 1. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ADVISORY COUNCIL ON HISTORIC PRESERVATION.
31 May 73, 2p

Descriptors: (*Beaver valley-1 reactor, *Environment), Reactor licensing.

For abstract, see NSA 28 05, number 12393.

DOCKET-50334-74/GA PC$4.00/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 1. ACTION TAKEN TO CORRECT THE ITEMS OF VIOLATION BROUGHT TO ATTENTION FOLLOWING INSPECTION ON FEBRUARY 13--15, 1973.
3 May 73, 40p

Descriptors: (*Beaver valley-1 reactor, *Electric cables), (*Beaver valley-2 reactor, Electric cables), Cleaning, Electric power, Electrodes, Inspection, Pumps, Quality assurance, Reactor licensing, Specifications, Valves, Welding.

For abstract, see NSA 28 05, number 12394.

DOCKET-50334-75/GA PC$4.00/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 1. ENVIRONMENTAL RADIOACTIVITY MONITORING PROGRAM, ALLEGED VIOLATIONS.
2 May 73, 40p

Descriptors: (*Beaver valley-1 reactor, *Environment), Air, Drinking water, Ecology, Ground water, Milk, Monitoring, Radioactivity, Reactor licensing, Reactor operation, Reactor start-up, Silt, Surface waters, Wild animals.

For abstract, see NSA 28 05, number 12395.

DOCKET-50334-76/GA PC$3.00/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 1. REACTOR VESSEL NOZZLE SAFE-END REPAIR.
13 Jun 73, 2p

Descriptors: (*Beaver valley-1 reactor, *Nozzles), Inspection, Pressure vessels, Reactor licensing, Repair.

For abstract, see NSA 28 05, number 12396.

DOCKET-50334-77/GA PC$3.00/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNITS 1 AND 2. COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENTS.
25 Jun 73, 7p DOCKET-50412-20

Descriptors: (*Beaver valley-1 reactor, *Environment), (*Beaver valley-2 reactor, Environment), Aquatic ecosystems, Fruits, Iodine 131, Milk, Monitoring, Reactor licensing, Sampling, Skeleton, Soils, Strontium 89, Strontium 90, Surface waters, Terrestrial ecosystems, Thyroid, Vegetables, Wild animals.

For abstract, see NSA 28 05, number 12397.

DOCKET-50334-78/GA PC$3.00/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNITS 1 AND 2. AEC DRAFT ENVIRONMENTAL STATEMENT.
25 Jun 73, 3p DOCKET-50412-21

Descriptors: (*Beaver valley-1 reactor, *Environment), (*Beaver valley-2 reactor, Environment), Blowdown, Gaseous wastes, Nonradioactive wastes, Radioactive wastes, Reactor licensing, Steam generators, Thermal pollution, Waste disposal, Waste management.

For abstract, see NSA 28 05, number 12398.

DOCKET-50334-79/GA PC$19.00/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 1. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 3.
26 Jun 73, 338p

Descriptors: (*Beaver valley-1 reactor, *Reactor safety), Buildings, Design, Electric power, Equipment protection devices, Radioactive wastes, Reactor components, Reactor licensing, Testing, Waste management.

For abstract, see NSA 28 06, number 14938.

DOCKET-50335-58/GA PC$3.00/MF$1.45
Florida Power and Light CO.
ST. LUCIE PLANT, UNIT 1. CADWELDS WILL BE USED FOR SPLICING REINFORCING BARS.
22 May 73, 1p

Descriptors: (*Lucie-1 reactor, *Steam generators), Reinforced concrete, Shielding, Welding.

For abstract, see NSA 28 05, number 12399.

DOCKET-50335-59/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
ST. LUCIE PLANT, UNIT 1. INSPECTION REPORT NO. 50-335/73-3.
24 May 73, 18p

Descriptors: (*Lucie-1 reactor, *Inspection), Containment, Coolants, Defects, Eccs, Environment, Fabrication, Floods, Leaks, Monitoring, Nondestructive testing, Nozzles, Personnel, Pipes, Pumps, Reactor cooling systems, Reactor licensing, Reactor sites, Ruptures, Seismic effects, Tanks, Valves, Welded joints.

For abstract, see NSA 28 05, number 12400.

DOCKET-50335-60/GA PC$3.00/MF$1.45
Florida Power and Light CO.
ST. LUCIE PLANT, UNIT 1. VALVE WALL THICKNESS.
23 May 73, 4p

Descriptors: (*Lucie-1 reactor, *Valves), Reactor licensing, Thickness.

For abstract, see NSA 28 05, number 12401.

DOCKET-50335-61/GA PC$3.00/MF$1.45
Florida Power and Light CO.

ST. LUCIE PLANT, UNIT 1. ENVIRONMENTAL REPORT, SUPPLEMENT 9.
5 Jun 73, 19p

Descriptors: (*Lucie-1 reactor, *Environment), Archaeology, Blowdown, Coolants, Diesel engines, Electric generators, Electric power, Pipelines, Pipes, Power transmission, Radioactive wastes, Reactor licensing, Seawater, Steam generators, Waste disposal, Water.

For abstract, see NSA 28 05, number 12402.

DOCKET-50335-62/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
ST. LUCIE PLANT, UNIT 1. INSPECTION REPORT NO. 50-335/73-4.
31 May 73, 13p

Descriptors: (*Lucie-1 reactor, *Inspection), Coolants, Cost, Environment, Nozzles, Pipes, Pumps, Quality assurance, Reactor licensing, Seismic effects, Valves.

For abstract, see NSA 28 05, number 12403.

DOCKET-50335-63/GA PC$16.25/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
ST. LUCIE PLANT, UNIT 1. FINAL ENVIRONMENTAL STATEMENT.
Jun 73, 284p

Descriptors: (*Lucie-1 reactor, *Environment), Cost benefit analysis, Radioactive wastes, Reactor licensing, Reactor operation, Reactor sites, Thermal effluents.

For abstract, see NSA 28 05, number 12404.

DOCKET-50335-64/GA PC$3.00/MF$1.45
Florida Power and Light CO.
ST. LUCIE PLANT, UNIT 1. REACTOR COOLANT PIPING INCIDENT REPORT.
30 May 73, 5p

Descriptors: (*Lucie-1 reactor, *Pipes), Bending, Nozzles, Quality control, Reactor cooling systems, Reactor licensing, Storage.

For abstract, see NSA 28 05, number 12405.

DOCKET-50336-60/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 2. POSSIBLE DAMAGE TO REACTOR CORE BARREL.
26 Apr 73, 3p

Descriptors: (*Millstone-2 reactor, *Reactor cores), Deformation, Mechanical structures, Reactor accidents, Supports.

For abstract, see NSA 28 04, number 10432.

DOCKET-50336-61/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 2. MOISTURE IN 5KV STRANDED POWER CABLE.
15 May 73, 4p

Descriptors: (*Millstone-2 reactor, *Electric cables), Equipment protection devices, Humidity, Reactor licensing, Reactor safety.

For abstract, see NSA 28 04, number 10433.

DOCKET-50336-62/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 2. ACTION TO BE TAKEN TO CORRECT ITEMS OF NONCOMPLIANCE BROUGHT TO ATTENTION FOLLOWING INSPECTION ON FEBRUARY 21--22, 1973.
9 Apr 73, 15p

Descriptors: (*Millstone-2 reactor, *Inspection), Calibration, Fabrication, Pressure gages, Quality assurance, Quality control, Reactor licensing, Recording systems, Tools.

For abstract, see NSA 28 05, number 12406.

DOCKET-50336-63/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 2. REPORTING OF DEFICIENCIES IN DESIGN AND CONSTRUCTION.
12 Jun 73, 4p

Descriptors: (*Millstone-2 reactor, *Supports), Defects, Design, Fabrication, Inspection, Materials handling, Reactor cores, Testing.

For abstract, see NSA 28 05, number 12407.

DOCKET-50336-64/GA PC$3.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 2. STRESS CONE FAILURES.
6 Jun 73, 4p

Descriptors: (*Millstone-2 reactor, *Electric cables), Circuit breakers, Defects, Design, Electronic circuits, Fabrication, Failures, Reactor licensing, Relays, Scram, Testing.

For abstract, see NSA 28 06, number 14939.

DOCKET-50336-65/GA PC$18.50/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 16.
27 Jun 73, 329p

Descriptors: (*Millstone-2 reactor, *Reactor safety), Containment, Electric batteries, Electric motors, Fuels, Leaks, Pipes, Pumps, Quality assurance, Radiation monitoring, Radioactive wastes, Reactor start-up, Ruptures, Seismic effects, Storage, Testing, Valves, Waste management, Water.

For abstract, see NSA 28 06, number 14940.

DOCKET-50336-66/GA PC$8.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 2. FINAL SAFETY ANALYSIS REPORT, AMENDMENT 17.
2 Jul 73, 120p

Descriptors: (*Millstone-2 reactor, *Reactor safety), Containment, Environment, High temperature, Pipelines, Reactor licensing, Reactor shutdown, Ruptures.

For abstract, see NSA 28 06, number 14941.

DOCKET-50338-72/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
NORTH ANNA POWER STATION, UNITS 1 AND 2. NOTICE OF RECEIPT OF APPLICATION FOR FACILITY OPERATING LICENSES; NOTICE OF CONSIDERATION OF ISSUANCE OF FACILITY OPERATING LICENSES AND NOTICE OF OPPORTUNITY FOR HEARING.
18 May 73, 9p DOCKET-50339-71

Descriptors: (*North anna-1 reactor, *Reactor licensing), (*North anna-2 reactor, Reactor licensing), Legal aspects.

For abstract, see NSA 28 05, number 12408.

DOCKET-50338-74/GA PC$3.50/MF$1.45
Virginia Electric and Power CO., Richmond.
NORTH ANNA POWER STATION, UNITS 1 AND 2. STEPS TAKEN TO CORRECT ITEMS IN VIOLATION OF AEC REQUIREMENTS BROUGHT TO ATTENTION IN LETTER DATED APRIL 30, 1973.
14 May 73, 29p

Descriptors: (*North anna-1 reactor, *Fabrication), (*North anna-2 reactor, Fabrication), Circuit breakers, Containment, Electrodes, Inspection, Quality assurance, Reactor licensing, Reactor safety, Valves, Welding.

For abstract, see NSA 28 05, number 12409.

DOCKET-50338-75/GA PC$18.00/MF$1.45
Virginia Electric and Power CO., Richmond.
NORTH ANNA POWER STATION, UNITS 1 AND 2. FINAL SAFETY ANALYSIS REPORT, SUPPLEMENT VOLUME I.
11 Jun 73, 320p DOCKET-50339-72

Descriptors: (*North anna-1 reactor, *Reactor safety), (*North anna-2 reactor, Reactor safety), Design, Quality assurance, Radioactive wastes, Reactor control systems, Reactor cooling systems, Reactor instrumentation, Reactor operation, Reactor sites, Safety engineering.

For abstract, see NSA 28 05, number 12410.

DOCKET-50338-76/GA PC$14.00/MF$1.45
Virginia Electric and Power CO., Richmond.
NORTH ANNA POWER STATION, UNITS 1 AND 2. APPLICANT'S ENVIRONMENTAL REPORT SUPPLEMENT, APPENDIX K; LICENSE APPLICATION, AMENDMENT 17.
30 Apr 73, 237p DOCKET-50339-74

Descriptors: (*North anna-1 reactor, *Environment), (*North anna-2 reactor, Environment), Reactor licensing, Reactor sites.

For abstract, see NSA 28 05, number 12411.

DOCKET-50338-77/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
NORTH ANNA POWER STATION, UNITS 1 AND 2. VENDOR INSPECTION REPORT NOS. 50-338/73-5 AND 50-339/73-5 (999-39).
27 Jun 73, 9p DOCKET-50339-75

Descriptors: (*North anna-1 reactor, *Inspection), (*North anna-2 reactor, Inspection), Documentation, Nondestructive testing, Personnel, Pressure vessels, Quality assurance, Quality control, Reactor licensing, Stress analysis.

For abstract, see NSA 28 06, number 14942.

DOCKET-50338-78/GA PC$8.75/MF$1.45
Virginia Electric and Power CO., Richmond.
NORTH ANNA POWER STATION, UNITS 1 AND 2. LICENSE APPLICATION, AMENDMENT 19.
11 Jul 73, 135p DOCKET-50339-76

Descriptors: (*North anna-1 reactor, *Reactor safety), (*North anna-2 reactor, Reactor safety), Design, Equipment protection devices, Quality assurance, Radiation protection, Reactor components, Reactor control systems, Reactor licensing, Reactor operation, Reactor sites, Specifications.

For abstract, see NSA 28 06, number 14943.

DOCKET-50339-73/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
NORTH ANNA POWER STATION, UNIT 2. INSPECTION REPORT NO. 50-339/73-2.
3 May 73, 20p

Descriptors: (*North anna-2 reactor, *Inspection), Fabrication, Quality assurance, Reactor licensing.

For abstract, see NSA 28 05, number 12412.

DOCKET-50341-56/GA PC$3.00/MF$1.45
Detroit Edison CO., Mich.
ENRICO FERMI ATOMIC POWER PLANT, UNIT 2. WESTINGHOUSE CIRCUIT BREAKERS.
14 Mar 73, 1p

Descriptors: (*Enrico fermi-2 reactor, *Circuit breakers), Equipment protection devices, Reactor licensing, Reactor safety.

For abstract, see NSA 28 04, number 10434.

DOCKET-50341-59/GA PC$3.00/MF$1.45
Detroit Edison CO., Mich.
ENRICO FERMI ATOMIC POWER PLANT, UNIT 2. STEPS TAKEN AS RESULT OF VENDOR INSPECTION AUDIT REPORT NO. 999-020/73-01.
16 Apr 73, 3p

Descriptors: (*Enrico fermi-2 reactor, *Fabrication), Heat treatments, Industrial radiography, Inspection, Pipes, Reactor licensing, Specifications, Welding.

For abstract, see NSA 28 05, number 12413.

DOCKET-50341-60/GA PC$3.00/MF$1.45
Detroit Edison CO., Mich.
ENRICO FERMI ATOMIC POWER PLANT, UNIT 2. RHR SERVICE WATER POND DESIGN.
11 Jun 73, 4p

Descriptors: (*Enrico fermi-2 reactor, *Cooling towers), Climates, Cooling, Design, Eccs, Lakes, Loss of coolant, Meteorology, Reactor licensing, Water.

For abstract, see NSA 28 06, number 14944.

DOCKET-50341-61/GA PC$3.00/MF$1.45
Detroit Edison CO., Mich.
ENRICO FERMI ATOMIC POWER PLANT, UNIT 2. NOTICE OF VIOLATION REGARDING PIPE FABRICATION AT DRAVO.
23 May 73, 15p

Descriptors: (*Enrico fermi-2 reactor, *Pipes), Fabrication, Inspection, Personnel, Quality control, Reactor licensing, Welding.

For abstract, see NSA 28 05, number 12414.

DOCKET-50344-64/GA PC$3.00/MF$1.45
Federal Power Commission, Washington, D.C. Bureau of Power.
TROJAN NUCLEAR PLANT. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL POWER COMMISSION.
11 Jun 73, 7p

Descriptors: (*Trojan reactor, *Environment), Electric power, Reactor licensing, Reactor operation, Reliability.

For abstract, see NSA 28 04, number 10435.

DOCKET-50344-65/GA PC$5.75/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
TROJAN NUCLEAR PLANT. TERRESTRIAL ECOLOGY, BASELINE STUDY.
Mar 73, 71p PGE-1003

Descriptors: (*Trojan reactor, *Ecology), Aquatic ecosystems, Lakes, Plants, Reactor licensing, Terrestrial ecosystems, Trees, Wild animals.

For abstract, see NSA 28 06, number 14945.

DOCKET-50346-59/GA PC$3.25/MF$1.45
Toledo Edison CO., Ohio.
DAVIS--BESSE NUCLEAR POWER STATION. PREOPERATIONAL ENVIRONMENTAL MONITORING PROGRAM.
11 Jun 73, 21p

Descriptors: (*Davis besse reactor, *Environment), Aquatic ecosystems, Monitoring, Reactor licensing, Reactor operation, Terrestrial ecosystems.

For abstract, see NSA 28 04, number 10436.

DOCKET-50346-60/GA PC$21.50/MF$1.45
Toledo Edison CO., Ohio.
DAVIS--BESSE NUCLEAR POWER STATION. FINAL SAFETY ANALYSIS REPORT, REVISION 1.
8 Jun 73, 387p

Descriptors: (*Davis besse reactor, *Reactor safety), Containment systems, Personnel, Radioactive wastes, Reactor control systems, Reactor cooling systems, Reactor instrumentation, Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 05, number 12415.

DOCKET-50348-61/GA PC$3.00/MF$1.45
Alabama Power CO., Birmingham.
JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1. REACTOR UPPER INTERNALS FIRE.
1 Jun 73, 4p

Descriptors: (*Farley-1 reactor, *Fires), Cleaning, Fuel assemblies, Inspection, Reactor cores, Reactor licensing, Supports, Surface contamination, Welded joints.

For abstract, see NSA 28 05, number 12416.

DOCKET-50348-62/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2. INSPECTION REPORT NOS. 50-348/73-2 AND 50-364/73-2.
26 Jun 73, 20p DOCKET-50364-50

Descriptors: (*Farley-1 reactor, *Inspection), (*Farley-2 reactor, Inspection), Circuit breakers, Containment, Control, Defects, Diagrams, Documentation, Electric cables, Fabrication, Industrial radiography, Management, Personnel, Pipes, Quality assurance, Reactor licensing, Reactor safety, Repair, Specifications, Steam generators, Stress analysis, Valves, Welding.

For abstract, see NSA 28 06, number 14946.

DOCKET-50352-36/GA PC$3.00/MF$1.45
Pennsylvania State Univ., Norristown (Usa). Cooperative Extension Service.
LIMERICK GENERATING STATION, UNITS 1 AND 2. PASTURING DAIRY COWS IN MONTGOMERY COUNTY.
22 May 73, 1p DOCKET-50353-36

Descriptors: (*Limerick-1 reactor, *Reactor sites), (*Limerick-2 reactor, Reactor sites), Agriculture, Cost, Cows, Crops, Food, Milk, Nutrition, Reactor licensing.

For abstract, see NSA 28 05, number 12417.

DOCKET-50352-37/GA PC$3.00/MF$1.45
Philadelphia Electric CO., PA.
LIMERICK GENERATING STATION, UNITS 1 AND 2. APPLICANT'S ENVIRONMENTAL REPORT, SUPPLEMENT 3.
25 May 73, 17p DOCKET-50353-37

Descriptors: (*Limerick-1 reactor, *Environment), (*Limerick-2 reactor, Environment), Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10438.

DOCKET-50352-38/GA PC$4.00/MF$1.45
Philadelphia Electric CO., PA.
LIMERICK GENERATING STATION, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 14.
25 May 73, 36p DOCKET-50353-38

Descriptors: (*Limerick-1 reactor, *Reactor safety), (*Limerick-2 reactor, Reactor safety), Charcoal, Filters, Quality assurance, Reactor licensing, Turbines.

For abstract, see NSA 28 05, number 12418.

DOCKET-50352-39/GA PC$3.75/MF$1.45
Delaware River Basin Commission, Trenton, N.J. (Usa).
LIMERICK GENERATING STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DELAWARE RIVER BASIN COMMISSION.
6 Jun 73, 33p DOCKET-50353-39

Descriptors: (*Limerick-1 reactor, *Environment), (*Limerick-2 reactor, Environment), Aquatic ecosystems, Archaeology, Cooling towers, Electric power, Power plants, Reactor licensing, Reactor sites, Water, Water reservoirs.

For abstract, see NSA 28 04, number 10439.

DOCKET-50352-40/GA PC$3.25/MF$1.45
Philadelphia Electric CO., PA.
LIMERICK GENERATING STATION, UNITS 1 AND 2. APPLICANT'S ENVIRONMENTAL REPORT, SUPPLEMENT 4.
Jun 73, 22p DOCKET-50353-40

Descriptors: (*Limerick-1 reactor, *Environment), (*Limerick-2 reactor, Environment), Meteorology, Monitoring, Reactor licensing, Reactor sites, Wind.

For abstract, see NSA 28 05, number 12419.

DOCKET-50354-40/GA PC$3.75/MF$1.45
Delaware River Basin Commission, Trenton, N.J. (Usa).
NEWBOLD ISLAND NUCLEAR GENERATING STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DELAWARE RIVER BASIN COMMISSION.
6 Jun 73, 35p DOCKET-50355-39

Descriptors: (*Newbold island-1 reactor, *Environment), (*Newbold island-2 reactor, Environment), Cooling towers, Electric power, Oysters, Power plants, Reactor licensing, Reactor sites, Water, Water reservoirs.

For abstract, see NSA 28 04, number 10440.

DOCKET-50354-41/GA PC$3.00/MF$1.45
Public Service Electric and Gas CO., Newark, N.J.
NEWBOLD ISLAND NUCLEAR GENERATING STATION, UNIT 1. CONTROL OF POTENTIAL RADIOIODINE RELEASES.
5 Jun 73, 2p DOCKET-50355-40

Descriptors: (*Newbold island-1 reactor, *Stack disposal), Charcoal, Environment, Filters, Iodine 131, Leaks, Reactor licensing, Valves.

For abstract, see NSA 28 05, number 12420.

DOCKET-50354-42/GA PC$3.50/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.

NEWBOLD ISLAND NUCLEAR GENERATING STATION, UNITS 1 AND 2. SAFETY EVALUATION, SUPPLEMENT 1.
17 May 73, 27p DOCKET-50355-41

Descriptors: (*Newbold island-1 reactor, *Reactor safety), (*Newbold island-2 reactor, Reactor safety), Blowdown, Control elements, Fuel densification, Iodine 131, Loss of coolant, Pumps, Reactor accidents, Reactor licensing, Stack disposal.

For abstract, see NSA 28 05, number 12421.

DOCKET-50355-42/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
NEWBOLD ISLAND NUCLEAR GENERATING STATION, UNIT 2. VENDOR INSPECTION REPORT NO. 999-035/73-03.
13 Apr 73, 10p

Descriptors: (*Newbold island-2 reactor, *Inspection), Fabrication, Pressure vessels, Reactor licensing.

For abstract, see NSA 28 05, number 12422.

DOCKET-50361-40/GA PC$3.50/MF$1.45
California State Water Resources Control Board, Sacramento (Usa).
SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3. CERTIFICATE OF CONFORMANCE WITH WATER QUALITY STANDARDS.
26 Apr 73, 30p DOCKET-50362-39

Descriptors: (*San onofre-2 reactor, *Liquid wastes), (*San onofre-3 reactor, Liquid wastes), Reactor licensing, Standards, Water pollution.

For abstract, see NSA 28 04, number 10441.

DOCKET-50361-42/GA PC$3.00/MF$1.45
Department of the Interior, Washington, D.C. (Usa).
SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF THE DEPARTMENT OF THE INTERIOR.
18 May 73, 2p DOCKET-50362-41

Descriptors: (*San onofre-2 reactor, *Environment), (*San onofre-3 reactor, Environment), Reactor licensing.

For abstract, see NSA 28 04, number 10442.

DOCKET-50361-43/GA PC$3.75/MF$1.45
Southern California Edison CO., Rosemead, Calif.
SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 18.
15 Jun 73, 32p DOCKET-50362-42

Descriptors: (*San onofre-2 reactor, *Reactor safety), (*San onofre-3 reactor, Reactor safety), Earthquakes, Reactor licensing, Reactor sites, Seas, Seismic waves, Tsunamis.

For abstract, see NSA 28 05, number 12423.

DOCKET-50363-51/GA PC$3.00/MF$1.45
Jersey Central Power and Light CO., Morristown, N.J.
FORKED RIVER NUCLEAR GENERATING STATION, UNIT 1. APPLICANT'S PROPOSED SUPPLEMENTAL FINDINGS RELATED TO WATER QUALITY CONSIDERATIONS.
14 May 73, 20p

Descriptors: (*Forked river-1 reactor, *Air pollution), Reactor licensing, Water, Water pollution.

For abstract, see NSA 28 04, number 10443.

DOCKET-50363-52/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
FORKED RIVER NUCLEAR GENERATING STATION, UNIT 1. INSPECTION REPORT NO. 50-363/73-02.
15 May 73, 8p

Descriptors: (*Forked river-1 reactor, *Inspection), Diagrams, Documentation, Education, Nondestructive testing, Personnel, Quality assurance, Reactor licensing, Regulations, Specifications, Standards.

For abstract, see NSA 28 06, number 14947.

DOCKET-50367-41/GA PC$3.00/MF$1.45
Northern Indiana Public Service CO., Hammond.
BAILLY GENERATING STATION, NUCLEAR 1. FINAL ENVIRONMENTAL STATEMENT, ERRATA.
22 May 73, 1p

Descriptors: (*Bailly-1 reactor, *Environment), Corrections, Reactor licensing.

For abstract, see NSA 28 04, number 10444.

DOCKET-50367-42/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Glen Ellyn, Ill. Region III.
BAILLY GENERATING STATION, NUCLEAR 1. INSPECTION REPORT NO. 50-367/73-02.
5 Jun 73, 7p

Descriptors: (*Bailly-1 reactor, *Inspection), Personnel, Quality assurance, Reactor licensing.

For abstract, see NSA 28 06, number 14948.

DOCKET-50368-42/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
ARKANSAS NUCLEAR ONE, UNIT 2. STEPS TAKEN TO CORRECT ITEMS IN VIOLATION OF AEC REQUIREMENTS BROUGHT TO ATTENTION IN LETTER DATED MARCH 28, 1973.
28 Mar 73, 17p

Descriptors: (*Arkansas-2 reactor, *Steam generators), Containment, Fabrication, Films, Industrial radiography, Inspection, Quality control, Reactor licensing, Tubes, Welding.

For abstract, see NSA 28 05, number 12424.

DOCKET-50368-43/GA PC$3.00/MF$1.45
Arkansas Power and Light CO., Little Rock.
ARKANSAS NUCLEAR ONE, UNIT 2. CODES AND STANDARDS.
31 May 73, 11p

Descriptors: (*Arkansas-2 reactor, *Standards), Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12434.

DOCKET-50373-35/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
LA SALLE COUNTY STATION, UNITS 1 AND 2. PLANS FOR DEVELOPMENT OF LA SALLE COUNTY STATION COOLING LAKE.
23 May 73, 2p DOCKET-50374-35

Descriptors: (*La salle county-1 reactor, *Lakes), (*La salle county-2 reactor, Lakes), Cooling, Environment, Management, Planning, Reactor licensing.

For abstract, see NSA 28 05, number 12425.

DOCKET-50373-36/GA PC$3.00/MF$1.45
Argonne National Lab., Ill.
LA SALLE COUNTY STATION, UNITS 1 AND 2. PROPOSED COOLING LAKE AS A PUBLIC RECREATION AREA.
23 Apr 73, 11p DOCKET-50374-36

Descriptors: (*La salle county-1 reactor, *Environment), (*La salle county-2 reactor, Environment), Lakes, Reactor licensing, Reactor sites.

For abstract, see NSA 28 05, number 12426.

DOCKET-50373-37/GA PC$3.00/MF$1.45
Argonne National Lab., Ill.
LA SALLE COUNTY STATION, UNITS 1 AND 2. ANALYSIS OF THE LA SALLE HEAT DISSIPATION SYSTEM.
11 Apr 73, 20p DOCKET-50374-37

Descriptors: (*La salle county-1 reactor, *Thermal diffusion), (*La salle county-2 reactor, Thermal diffusion), Cooling, Heat transfer, Lakes, Reactor licensing, Thermal pollution.

For abstract, see NSA 28 05, number 12427.

DOCKET-50373-38/GA PC$3.00/MF$1.45
Illinois Dept. Of Conservation, Springfield (Usa). Illinois Natural History Survey, Urbana.
LA SALLE COUNTY STATION, UNITS 1 AND 2. DEVELOPMENT PLAN FOR LAND AND WATER RESOURCES OF THE LA SALLE COUNTY COOLING LAKE, COMMENTS OF ILLINOIS DEPARTMENT OF CONSERVATION AND ILLINOIS NATURAL HISTORY SURVEY.
21 May 73, 6p DOCKET-50374-38

Descriptors: (*La salle county-1 reactor, *Lakes), (*La salle county-2 reactor, Lakes), Aquatic ecosystems, Fishes, Illinois, Planning, Reactor licensing, Reactor sites, Water.

For abstract, see NSA 28 06, number 14949.

DOCKET-50373-39/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
LA SALLE COUNTY STATION, UNITS 1 AND 2. LAKE MANAGEMENT PROGRAM.
13 Jun 73, 1p DOCKET-50374-39

Descriptors: (*La salle county-1 reactor, *Lakes), (*La salle county-2 reactor, Lakes), Cooling, Illinois, Management, Reactor licensing.

For abstract, see NSA 28 06, number 14950.

DOCKET-50373-40/GA PC$3.00/MF$1.45
Commonwealth Edison CO., Chicago, Ill.
LA SALLE COUNTY STATION, UNITS 1 AND 2. COMMENTS ON COMBUSTION ENGINEERING REPORT ON COOLING LAKE BY ILLINOIS NATURAL HISTORY SURVEY.
12 Jun 73, 3p DOCKET-50374-40

Descriptors: (*La salle county-1 reactor, *Lakes), (*La salle county-2 reactor, Lakes), Aquatic ecosystems, Cooling, Fishes, Illinois, Reactor licensing.

For abstract, see NSA 28 06, number 14951.

DOCKET-50376-39/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
AGUIRRE NUCLEAR PLANT, UNIT 1. INSPECTION REPORT 50-376/73-2.
27 Jun 73, 11p

Descriptors: (*Aguirre-1 reactor, *Inspection), Cleaning, Fabrication, Fuel cans, Pressure vessels, Reactor licensing.

For abstract, see NSA 28 06, number 14952.

DOCKET-50382-63/GA PC$3.00/MF$1.45
Louisiana Power and Light CO., New Orleans.
WATERFORD STEAM ELECTRIC STATION, UNIT 3. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 36.
30 May 73, 11p

Descriptors: (*Waterford-3 reactor, *Reactor safety), Accidents, Ammonium compounds, Combustion, Containment, Design, Gasoline, Mississippi river, Nitrates, Reactor licensing, Ships, Transport.

For abstract, see NSA 28 05, number 12428.

DOCKET-50382-64/GA PC$3.00/MF$1.45
Louisiana Power and Light CO., New Orleans.
WATERFORD STEAM ELECTRIC STATION, UNIT 3. LIST OF COMBUSTION ENGINEERING REPORTS APPLICABLE.
15 May 73, 3p

Descriptors: (*Waterford-3 reactor, *Data), Reactor licensing.

For abstract, see NSA 28 05, number 12429.

DOCKET-50382-65/GA PC$5.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
WATERFORD STEAM ELECTRIC STATION, UNIT 3. SAFETY EVALUATION, SUPPLEMENT 1.
1 Jun 73, 60p

Descriptors: (*Waterford-3 reactor, *Reactor safety), Containment, Liquid wastes, Pipes, Quality control, Reactor licensing, Ruptures, Steam, Transport, Waste management.

For abstract, see NSA 28 05, number 12430.

DOCKET-50382-66/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
WATERFORD STEAM ELECTRIC STATION, UNIT 3. INSPECTION REPORT 50-382/73-1.
26 Jun 73, 10p

Descriptors: (*Waterford-3 reactor, *Inspection), Circuit breakers, Design, Floods, Management, Pumps, Quality assurance, Reactor licensing, Reactor sites, Scram, Thickness, Valves.

For abstract, see NSA 28 06, number 14953.

DOCKET-50387-36/GA PC$3.00/MF$1.45
Pennsylvania Office of State Planning and Development, Harrisburg (Usa).
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF PENNSYLVANIA OFFICE OF STATE PLANNING AND DEVELOPMENT.
3 May 73, 4p DOCKET-50388-35

Descriptors: (*Susquehanna-1 reactor, *Environment), (*Susquehanna-2 reactor, Environment), Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12431.

DOCKET-50387-39/GA PC$3.00/MF$1.45
Environmental Protection Agency, Washington, D.C. (Usa).
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
25 May 73, 15p DOCKET-50388-38

Descriptors: (*Susquehanna-1 reactor, *Environment), (*Susquehanna-2 reactor, Environment), Iodine 131, Radiation protection, Radioactive wastes, Reactor accidents, Reactor licensing, Standards, Transport, Waste processing, Water.

For abstract, see NSA 28 05, number 12432.

DOCKET-50387-40/GA PC$18.50/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2. FINAL ENVIRONMENTAL STATEMENT.
Jun 73, 322p DOCKET-50388-39

Descriptors: (*Susquehanna-1 reactor, *Environment), (*Susquehanna-2 reactor, Environment), Fabrication, Monitoring, Power transmission, Radioactive wastes, Reactor accidents, Reactor licensing, Reactor sites, Stack disposal, Thermal pollution.

For abstract, see NSA 28 05, number 12433.

DOCKET-50387-41/GA PC$3.00/MF$1.45
Pennsylvania Power and Light CO., Allentown.
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL POWER COMMISSION.
21 Jun 73, 4p DOCKET-50388-40

Descriptors: (*Susquehanna-1 reactor, *Environment), (*Susquehanna-2 reactor, Environment), Electric power, Fabrication, Reactor licensing, Reliability.

For abstract, see NSA 28 06, number 14954.

DOCKET-50389-18/GA PC$3.75/MF$1.45
Florida Power and Light CO.
ST. LUCIE PLANT, UNIT 2. PRELIMINARY SAFETY ANALYSIS REPORT, ANTITRUST REVIEW SUPPLEMENT.
19 Apr 73, 31p

Descriptors: (*Lucie-2 reactor, *Reactor safety), Electric power, Legal aspects, Power transmission, Reactor licensing.

For abstract, see NSA 28 05, number 12435.

DOCKET-50389-19/GA PC$12.00/MF$1.45
Florida Power and Light CO.
ST. LUCIE PLANT, UNIT 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 8.
15 May 73, 196p

Descriptors: (*Lucie-2 reactor, *Reactor safety), Quality assurance, Reactor licensing, Specifications.

For abstract, see NSA 28 04, number 10445.

DOCKET-50389-20/GA PC$6.00/MF$1.45
Florida Power and Light CO.
ST. LUCIE PLANT, UNIT 2. APPLICATION FOR LICENSES.
14 May 73, 79p

Descriptors: (*Lucie-2 reactor, *Reactor licensing), Economics, Fabrication, Reactor operation.

For abstract, see NSA 28 04, number 10446.

DOCKET-50395-44/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1. INSPECTION REPORT NO. 50-395/73-1.
16 Apr 73, 16p

Descriptors: (*Summer-1 reactor, *Inspection), Fabrication, Quality assurance, Reactor licensing, Reactor sites, Regulations, Specifications, Us aec.

For abstract, see NSA 28 04, number 10447.

DOCKET-50395-45/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1. CONSTRUCTION PERMIT NO. CPPR-94, AMENDMENT 1.
29 May 73, 5p

Descriptors: (*Summer-1 reactor, *Radiation monitoring), Reactor licensing.

For abstract, see NSA 28 04, number 10448.

DOCKET-50400-44/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
SHEARON HARRIS NUCLEAR POWER PLANT, UNITS 1, 2, 3, AND 4. EMERGENCY TRAFFIC PLAN.
15 May 73, 11p DOCKET-50401-44, DOCKET-50402-44

Descriptors: (*Harris-1 reactor, *Reactor accidents), (*Harris-2 reactor, Reactor accidents), (*Harris-3 reactor, Reactor accidents), (*Harris-4 reactor, Reactor accidents), Reactor licensing, Reactor sites, Transport.

For abstract, see NSA 28 04, number 10449.

DOCKET-50400-45/GA PC$3.00/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
SHEARON HARRIS NUCLEAR POWER PLANT, UNITS 1, 2, 3, AND 4. DAM AND DIKE CORE MATERIALS TO HAVE A PLASTICITY INDEX OF NOT LESS THAN 10.
25 May 73, 1p DOCKET-50401-45, DOCKET-50402-45

Descriptors: (*Harris-1 reactor, *Dams), (*Harris-2 reactor, Dams), (*Harris-3 reactor, Dams), (*Harris-4 reactor, Dams), Reactor licensing, Reactor sites, Soils, Specifications.

For abstract, see NSA 28 05, number 12436.

DOCKET-50400-46/GA PC$5.50/MF$1.45
Carolina Power and Light CO., Raleigh, N.C.
SHEARON HARRIS NUCLEAR POWER PLANT, UNITS 1, 2, 3, AND 4. LICENSE APPLICATION, AMENDMENT 26.
17 May 73, 68p DOCKET-50401-46, DOCKET-50402-46

Descriptors: (*Harris-1 reactor, *Cost), (*Harris-2 reactor, Cost), (*Harris-3 reactor, Cost), (*Harris-4 reactor, Cost), Economics, Reactor licensing, Specifications.

For abstract, see NSA 28 05, number 12437.

DOCKET-50404-52/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
NORTH ANNA POWER STATION, UNITS 3 AND 4. VENDOR INSPECTION REPORT NOS. 50-404/73-2 AND 50-405/73-2 (999-34).
27 Jun 73, 14p DOCKET-50405-51

Descriptors: (*North anna-1 reactor, *Inspection), (*North anna-2 reactor, Inspection), Closures, Control rod drives, Fabrication, Nondestructive testing, Nozzles, Pipes, Pressure vessels, Primary coolant circuits, Reactor licensing, Specifications, Standards, Steam generators, Welded joints.

For abstract, see NSA 28 06, number 14955.

DOCKET-50409-52/GA PC$3.75/MF$1.45
Dairyland Power Cooperative, la Crosse, Wis.
LA CROSSE BOILING WATER REACTOR. FUEL DENSIFICATION EFFECTS.
21 May 73, 34p

Descriptors: (*Lacbwr reactor, *Fuel densification), Reactor licensing.

For abstract, see NSA 28 04, number 10450.

DOCKET-50409-53/GA PC$3.00/MF$1.45
Dairyland Power Cooperative, la Crosse, Wis.
LA CROSSE BOILING WATER REACTOR. VALVE WALL THICKNESS.
4 May 73, 1p

Descriptors: (*Lacbwr reactor, *Valves), Reactor licensing, Thickness.

For abstract, see NSA 28 05, number 12438.

DOCKET-50409-54/GA PC$3.25/MF$1.45
Dairyland Power Cooperative, la Crosse, Wis.
LA CROSSE BOILING WATER REACTOR. SUPPLEMENT 1 TO LACBWR REFUELING PLAN FOR FUEL CYCLE II.
8 Jun 73, 21p

Descriptors: (*Lacbwr reactor, *Reactor fueling), Defects, Fuel pins, Reactor licensing, Reactor operation, Reactor safety, Spent fuel elements.

For abstract, see NSA 28 05, number 12439.

DOCKET-50409-55/GA PC$3.25/MF$1.45
Dairyland Power Cooperative, la Crosse, Wis.
LA CROSSE BOILING WATER REACTOR. MONTHLY OPERATING REPORT.
Mar 73, 25p DPC-851-57

Descriptors: (*Lacbwr reactor, *Reactor operation), Reactor licensing.

For abstract, see NSA 28 05, number 12440.

DOCKET-50409-56/GA PC$3.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
LA CROSSE BOILING WATER REACTOR. TECHNICAL SPECIFICATIONS, CHANGE 11.
11 May 73, 2p

Descriptors: (*Lacbwr reactor, *Respirators), Gases, Particles, Radiation protection, Reactor licensing, Safety, Specifications, Vapors.

For abstract, see NSA 28 05, number 12441.

DOCKET-50409-57/GA PC$3.50/MF$1.45
Dairyland Power Cooperative, la Crosse, Wis.
LA CROSSE BOILING WATER REACTOR. STEPS TAKEN TO CORRECT ITEMS OF NON-COMPLIANCE BROUGHT TO ATTENTION IN LETTER DATED APRIL 23, 1973.
29 May 73, 26p

Descriptors: (*Lacbwr reactor, *Testing), Containment spray systems, Inspection, Reactor fueling, Reactor licensing, Reactor start-up, Specifications, Valves.

For abstract, see NSA 28 05, number 12442.

DOCKET-50410-29/GA PC$3.00/MF$1.45
Niagara Mohawk Power Corp., Syracuse, N. Y.
NINE MILE POINT NUCLEAR STATION, UNIT 2. ENVIRONMENTAL REPORT, CONFIRMATION OF SUPPLEMENT 4.
11 May 73, 2p

Descriptors: (*Nine mile point-2 reactor, *Environment), Buildings, Reactor cooling systems, Reactor licensing, Steam condensers.

For abstract, see NSA 28 04, number 10451.

DOCKET-50410-30/GA PC$3.00/MF$1.45
Federal Power Commission, Washington, D.C. Bureau of Power.
NINE MILE POINT NUCLEAR STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL POWER COMMISSION.
23 May 73, 5p

Descriptors: (*Nine mile point-2 reactor, *Environment), Electric power, Reactor licensing.

For abstract, see NSA 28 04, number 10452.

DOCKET-50410-31/GA PC$3.00/MF$1.45
Environmental Protection Agency, Washington, D.C. (Usa).
NINE MILE POINT NUCLEAR STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
25 May 73, 18p

Descriptors: (*Nine mile point-2 reactor, *Environment), Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 04, number 10453.

DOCKET-50410-32/GA PC$8.35/MF$1.45
Niagara Mohawk Power Corp., Lycoming, N.Y.
NINE MILE POINT NUCLEAR STATION, UNIT 2. PRELIMINARY SAFETY ANALYSIS REPORT, SUPPLEMENT 11.
15 Jun 73, 121p

Descriptors: (*Nine mile point-2 reactor, *Reactor safety), Containment systems, Quality assurance, Reactor control systems, Reactor cooling systems, Reactor instrumentation, Reactor licensing.

For abstract, see NSA 28 05, number 12443.

DOCKET-50410-33/GA PC$4.25/MF$1.45
Niagara Mohawk Power Corp., Syracuse, N. Y.
NINE MILE POINT NUCLEAR STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, APPLICANT'S RESPONSES TO ADDITIONAL GOVERNMENT AGENCY COMMENTS.
29 May 73, 42p

Descriptors: (*Nine mile point-2 reactor, *Environment), Climates, Geology, Radioactive wastes, Reactor accidents, Reactor licensing, Solid wastes, Terrestrial ecosystems, Thermal pollution, Turbines, Ventilation, Water.

For abstract, see NSA 28 05, number 12444.

DOCKET-50410-34/GA PC$3.00/MF$1.45
Niagara Mohawk Power Corp., Syracuse, N. Y.
NINE MILE POINT NUCLEAR STATION, UNIT 2. PRELIMINARY SAFETY ANALYSIS REPORT, INFORMATION TO BE INCORPORATED INTO AN AMENDMENT.
21 May 73, 12p

Descriptors: (*Nine mile point-2 reactor, *Reactor safety), Biological shields, Containment, Diesel engines, Electric batteries, Equipment protection devices, Pipelines, Quality assurance, Reactor licensing, Seismic effects, Valves, Ventilation.

For abstract, see NSA 28 05, number 12445.

DOCKET-50410-35/GA PC$50.50/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
NINE MILE POINT NUCLEAR STATION, UNIT 2. FINAL ENVIRONMENTAL STATEMENT.
Jun 73, 966p

Descriptors: (*Nine mile point-2 reactor, *Reactor licensing), Environment, Monitoring, Power transmission, Reactor accidents, Reactor sites.

For abstract, see NSA 28 05, number 12446.

DOCKET-50410-36/GA PC$15.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
NINE MILE POINT NUCLEAR STATION, UNIT 2. SAFETY EVALUATION.
15 Jun 73, 259p

Descriptors: (*Nine mile point-2 reactor, *Reactor safety), Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12447.

DOCKET-50412-12/GA PC$3.00/MF$1.45
Coast Guard, Washington, D.C.
BEAVER VALLEY POWER STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF UNITED STATES COAST GUARD.
15 May 73, 2p

Descriptors: (*Beaver valley-2 reactor, *Nonradioactive wastes), Chloramines, Chlorine, Environment, Reactor licensing.

For abstract, see NSA 28 04, number 10454.

DOCKET-50412-13/GA PC$3.00/MF$1.45
Department of Agriculture, Washington, D. C.
BEAVER VALLEY POWER STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DEPARTMENT OF AGRICULTURE.
16 May 73, 2p

Descriptors: (*Beaver valley-2 reactor, *Environment), Reactor licensing, Soils, Water.

For abstract, see NSA 28 04, number 10455.

DOCKET-50412-14/GA PC$3.00/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF APPLICANT.
22 May 73, 27p

Descriptors: (*Beaver valley-2 reactor, *Environment), Corrections, Nonradioactive wastes, Radiation protection, Radioactive wastes, Reactor licensing.

For abstract, see NSA 28 04, number 10456.

DOCKET-50412-15/GA PC$3.00/MF$1.45
Office of the Assistant Secretary of Commerce, Washington, D.C. (Usa).
BEAVER VALLEY POWER STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF THE ASSISTANT SECRETARY OF COMMERCE.
23 May 73, 5p

Descriptors: (*Beaver valley-2 reactor, *Environment), Aquatic ecosystems, Chlorine, Containment, Ecology, Fishes, Gaseous wastes, Heat transfer, Leaks, Monitoring, Radioactive wastes, Reactor licensing, Tanks, Thermal pollution, Waste management.

For abstract, see NSA 28 06, number 14956.

DOCKET-50412-16/GA PC$9.50/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 2. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 5.
4 May 73, 149p

Descriptors: (*Beaver valley-2 reactor, *Reactor safety), Containment systems, Equipment protection devices, Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10457.

DOCKET-50412-17/GA PC$3.00/MF$1.45
Advisory Council on Historic Preservation, Washington, D.C. (Usa).
BEAVER VALLEY POWER STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ADVISORY COUNCIL ON HISTORIC PRESERVATION.
22 May 73, 1p

Descriptors: (*Beaver valley-2 reactor, *Environment), Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10458.

DOCKET-50412-18/GA PC$9.50/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 11. AMENDMENT 5.
4 May 73, 149p

Descriptors: (*Beaver valley-2 reactor, *Reactor safety), Failures, Filters, Hydrogen, Iodine 131, Leaks, Personnel, Pumps, Radiation protection, Reactor components, Reactor control systems, Reactor cooling systems, Reactor licensing, Reactor shutdown, Recombiners, Stress analysis, Stresses, Valves, Ventilation, Wind.

For abstract, see NSA 28 05, number 12448.

DOCKET-50412-19/GA PC$3.00/MF$1.45
Department of the Interior, Washington, D.C. (Usa).
BEAVER VALLEY POWER STATION, UNIT 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF THE U.S. DEPARTMENT OF THE INTERIOR.
6 Jun 73, 7p

Descriptors: (*Beaver valley-2 reactor, *Environment), Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12449.

DOCKET-50412-22/GA PC$29.25/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 2. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 6.
26 Jun 73, 543p

Descriptors: (*Beaver valley-2 reactor, *Reactor safety), Design, Equipment protection devices, Radioactive wastes, Reactor accidents, Reactor components, Reactor licensing, Reactor sites, Testing, Waste management.

For abstract, see NSA 28 06, number 14957.

DOCKET-50412-23/GA PC$18.00/MF$1.45
Duquesne Light CO., Pittsburgh, PA.
BEAVER VALLEY POWER STATION, UNIT 2. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 7.
2 Jul 73, 319p

Descriptors: (*Beaver valley-2 reactor, *Reactor safety), Austenite, Decoupling, Design, Fractures, Liquid flow, Milk, Personnel, Pipelines, Reactor sites, Sampling, Seismic effects, Soils, Stainless steels, Standards, Vegetables.

For abstract, see NSA 28 06, number 14958.

DOCKET-50413-21/GA PC$3.00/MF$1.45
Corps of Engineers, Charleston, S.C. (Usa). Charleston District.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, NO COMMENTS BY CORPS OF ENGINEERS.
15 May 73, 1p DOCKET-50414-21

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Reactor licensing.

For abstract, see NSA 28 05, number 12450.

DOCKET-50413-22/GA PC$8.75/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. ENVIRONMENTAL REPORT, AMENDMENT 2.
18 May 73, 131p DOCKET-50414-22

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10459.

DOCKET-50413-23/GA PC$3.00/MF$1.45
South Carolina Pollution Control Authority, Columbia (Usa).
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF SOUTH CAROLINA POLLUTION CONROL AUTHORITY.
8 Jun 73, 3p DOCKET-50414-23

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Reactor licensing, Reactor operation.

For abstract, see NSA 28 05, number 12451.

DOCKET-50413-24/GA PC$3.00/MF$1.45
Office of the Assistant Secretary of Commerce, Washington, D.C. (Usa).
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ASSISTANT SECRETARY OF COMMERCE.
12 Jun 73, 2p DOCKET-50414-24

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Aquatic ecosystems, Design basis accidents, Ducks, Gaseous wastes, Plants, Radiation monitoring, Reactor accidents, Reactor licensing, Sampling, Tanks, Waste management.

For abstract, see NSA 28 06, number 14959.

DOCKET-50413-25/GA PC$3.00/MF$1.45
Catawba Regional Planning Council. Rock Hill, S.C. (Usa).
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF CATAWBA REGIONAL PLANNING COUNCIL.
5 Jun 73, 1p DOCKET-50414-25

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Cooling towers, Lakes, Reactor licensing, Rivers, Thermal pollution.

For abstract, see NSA 28 06, number 14960.

DOCKET-50413-26/GA PC$4.25/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DUKE POWER COMPANY.
8 Jun 73, 44p DOCKET-50414-26

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Aquatic ecosystems, Cooling towers, Reactor licensing, Reactor sites, Thermal effluents.

For abstract, see NSA 28 05, number 12452.

DOCKET-50413-27/GA PC$3.00/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS BY STATE OF SOUTH CAROLINA WATER RESOURCES COMMISSION; SOUTH CAROLINA STATE BOARD OF HEALTH; SOUTH CAROLINA DEPARTMENT OF ARCHIVES AND HISTORY; SOUTH CAROLINA STATE HIGHWAY DEPARTMENT; SOUTH CAROLINA STATE COMMISSION OF FORESTRY; SOUTH CAROLINA STATE DEVELOPMENT BOARD.
7 Jun 73, 12p DOCKET-50414-27

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Aquatic ecosystems, Cooling, Cooling towers, Cost, Electric power, Evaporation, Forests, Lakes, Losses, Radiation monitoring, Reactor sites, Spent fuels, Terrestrial ecosystems, Thermal pollution, Transport, Water.

For abstract, see NSA 28 06, number 14961.

DOCKET-50413-28/GA PC$3.00/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DEPARTMENT OF TRANSPORTATION, UNITED STATES COAST GUARD.
13 Jun 73, 1p DOCKET-50414-28

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Cost, Reactor licensing, Transport.

For abstract, see NSA 28 06, number 14962.

DOCKET-50413-29/GA PC$3.00/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS BY FOREST SERVICE.
14 Jun 73, 2p DOCKET-50414-29

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Agriculture, Cooling, Electric power, Forests, Heat transfer, Heating, Reactor licensing, Water.

For abstract, see NSA 28 06, number 14963.

DOCKET-50413-30/GA PC$20.50/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 9, QUESTIONS AND ANSWERS.
22 Jun 73, 370p DOCKET-50414-30

Descriptors: (*Catawba-1 reactor, *Reactor safety), (*Catawba-2 reactor, Reactor safety), Air, Blowdown, Containment, Containment spray systems, Diesel engines, Electric generators, Floods, Lakes, Quality assurance, Reactor licensing, Reactor sites, Seismic effects, Solid wastes, Tanks, Valves, Water reservoirs.

For abstract, see NSA 28 06, number 14964.

DOCKET-50413-31/GA PC$3.00/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. COMMENTS ON DRAFT ENVIRONMENTAL STATEMENT.
25 Jun 73, 6p DOCKET-50414-31

Descriptors: (*Catawba-1 reactor, *Environment), (*Catawba-2 reactor, Environment), Cooling, Cooling towers, Fishes, Forests, Lakes, North carolina, Reactor licensing, Reactor sites, Thermal pollution, Wild animals.

For abstract, see NSA 28 06, number 14965.

DOCKET-50413-32/GA PC$4.75/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. LICENSE APPLICATION, AMENDMENT 3.
2 Jul 73, 53p DOCKET-50414-32

Descriptors: (*Catawba-1 reactor, *Reactor licensing), (*Catawba-2 reactor, Reactor licensing), Cost, Liabilities.

For abstract, see NSA 28 06, number 14966.

DOCKET-50413-33/GA PC$7.50/MF$1.45
Duke Power CO., Charlotte, N.C.
CATAWBA NUCLEAR STATION, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 10.
2 Jul 73, 109p DOCKET-50414-33

Descriptors: (*Catawba-1 reactor, *Reactor safety), Blowdown, Containment, Dams, Data, Environment, Lakes, Loss of coolant, Reactor accidents, Reactor licensing, Seismic detection, Ventilation.

For abstract, see NSA 28 06, number 14967.

DOCKET-50416-25/GA PC$3.00/MF$1.45
Advisory Council on Historic Preservation, Washington, D.C. (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ADVISORY COUNCIL ON HISTORIC PRESERVATION.
11 May 73, 2p DOCKET-50417-25

Descriptors: (*Grand gulf-1 reactor, *Reactor sites), (*Grand gulf-2 reactor, Reactor sites), Archaeology, Environment.

For abstract, see NSA 28 04, number 10460.

DOCKET-50416-26/GA PC$3.00/MF$1.45
Office of the Assistant Secretary of Commerce, Washington, D.C. (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF ASSISTANT SECRETARY OF COMMERCE.
7 Jun 73, 2p DOCKET-50417-26

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Aquatic ecosystems, Birds, Design basis accidents, Floods, Lakes, Meteorology, Mississippi river, Radiation monitoring, Reactor licensing, Terrestrial ecosystems.

For abstract, see NSA 28 06, number 14968.

DOCKET-50416-27/GA PC$3.00/MF$1.45
Federal Power Commission, Washington, D.C. Bureau of Power.
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FEDERAL POWER COMMISSION.
11 Jun 73, 3p DOCKET-50417-27

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Electric power, Fabrication, Reactor licensing.

For abstract, see NSA 28 05, number 12453.

DOCKET-50416-28/GA PC$18.25/MF$1.45
Mississippi Power and Light CO., Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 7.
8 Jun 73, 325p DOCKET-50417-28

Descriptors: (*Grand gulf-1 reactor, *Reactor safety), (*Grand gulf-2 reactor, Reactor safety), Accidents, Automation, Buildings, Carbon dioxide, Casks, Chlorine, Containment, Cranes, Demineralizers, Diesel engines, Electric generators, Fires, Heat exchangers, Liquid wastes, Mississippi river, Pipelines, Pumps, Radioactive wastes, Reactor cooling systems, Reactor licensing, Ruptures, Ships, Spent fuel elements, Storage, Transport, Ventilation, Water.

For abstract, see NSA 28 05, number 12454.

DOCKET-50416-29/GA PC$3.75/MF$1.45
Coast Guard, Baltimore, MD. Field Testing and Development Center.
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF DEPARTMENT OF TRANSPORTATION, U. S. COAST GUARD.
5 Jun 73, 35p DOCKET-50417-29

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Aircraft, Electric power, Electromagnetism, Noise, Power transmission, Reactor licensing, Transport.

For abstract, see NSA 28 05, number 12455.

DOCKET-50416-30/GA PC$3.00/MF$1.45
Mississippi Power and Light CO., Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF STATE OF MISSISSIPPI, DEPARTMENT OF ARCHIVES AND HISTORY, FORESTRY COMMISSION, GEOLOGICAL ECONOMIC TOPOGRAPHICAL SURVEY, STATE HIGHWAY DEPARTMENT, AND BOARD OF WATER COMMISSIONERS.
7 Jun 73, 8p DOCKET-50417-30

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Archaeology, Electric power, Ground water, Mississippi, Motion, Power transmission, Reactor licensing.

For abstract, see NSA 28 06, number 14969.

DOCKET-50416-31/GA PC$3.00/MF$1.45
Mississippi Dept. Of Archives and History, Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF STATE OF MISSISSIPPI, DEPARTMENT OF ARCHIVES AND HISTORY.
8 May 73, 2p DOCKET-50417-31

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Archaeology, Electric power, Mississippi, Power transmission, Reactor licensing.

For abstract, see NSA 28 06, number 14970.

DOCKET-50416-32/GA PC$3.00/MF$1.45
Mississippi Power and Light CO., Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF APPLICANT.
4 Jun 73, 2p DOCKET-50417-32

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Electric power, Ground water, Monitoring, Power transmission, Reactor licensing, Reactor sites, Ships, Transport.

For abstract, see NSA 28 05, number 12456.

DOCKET-50416-33/GA PC$3.00/MF$1.45
Mississippi Power and Light CO., Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. ENVIRONMENTAL REPORT, AMENDMENT 3.
15 Jun 73, 13p DOCKET-50417-33

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Diagrams, Liquid wastes, Reactor cooling systems, Reactor licensing, Water.

For abstract, see NSA 28 06, number 14971.

DOCKET-50416-34/GA PC$3.00/MF$1.45
Department of the Interior, Washington, D.C. (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF UNITED STATES DEPARTMENT OF THE INTERIOR.
21 Jun 73, 5p DOCKET-50417-34

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Archaeology, Blowdown, Cooling towers, Fishes, Mississippi river, Monitoring, Power transmission, Radioactive wastes, Reactor accidents, Reactor licensing, Reactor sites, Solid wastes, Thermal pollution, Waste disposal, Wild animals.

For abstract, see NSA 28 06, number 14972.

DOCKET-50416-35/GA PC$3.00/MF$1.45
Department of Agriculture, Washington, D. C.
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF FOREST SERVICE AND SOIL CONSERVATION SERVICE.
19 Jun 73, 6p DOCKET-50417-35

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Coal, Comparative evaluations, Cooling, Cost, Nuclear power plants, Power, Power plants, Power transmission, Reactor cooling systems, Reactor licensing, Reactor sites, Soils, Uranium 235, Water.

For abstract, see NSA 28 06, number 14973.

DOCKET-50416-36/GA PC$3.00/MF$1.45
Mississippi Power and Light CO., Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF MISSISSIPPI STATE BOARD OF HEALTH, MISSISSIPPI GAME AND FISH COMMISSION, AND MISSISSIPPI BOARD OF WATER COMMISSIONERS.
15 Jun 73, 6p DOCKET-50417-36

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Design basis accidents, Fishes, Gaseous wastes, Ground water, Hydrology, Radioactive wastes, Reactor licensing, Waste disposal, Wild animals.

For abstract, see NSA 28 06, number 14974.

DOCKET-50416-37/GA PC$12.25/MF$1.45
Mississippi Power and Light CO., Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 8.
15 Jun 73, 205p DOCKET-50417-37

Descriptors: (*Grand gulf-1 reactor, *Reactor safety), (*Grand gulf-2 reactor, Reactor safety), Control rod drives, Diesel engines, Electric generators, Electrical equipment, Motors, Power, Pumps, Radioactivity, Reactor cores, Reactor instrumentation, Sprays, Standards, Transients, Valves.

For abstract, see NSA 28 06, number 14975.

DOCKET-50416-38/GA PC$3.00/MF$1.45
Mississippi Power and Light CO., Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, RESPONSE TO AEC COMMENTS.
19 Jun 73, 4p DOCKET-50417-38

Descriptors: (*Grand gulf-1 reactor, *Environment), (*Grand gulf-2 reactor, Environment), Archaeology, Electric power, Electromagnetic radiation, Lakes, Mississippi, Noise, Power transmission, Reactor accidents, Reactor licensing, Reactor sites.

For abstract, see NSA 28 06, number 14976.

DOCKET-50416-39/GA PC$16.75/MF$1.45
Mississippi Power and Light CO., Jackson (Usa).
GRAND GULF NUCLEAR STATION, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS PLANT, AMENDMENT 9.
28 Jun 73, 291p DOCKET-50417-39

Descriptors: (*Grand gulf-1 reactor, *Reactor safety), (*Grand gulf-2 reactor, Reactor safety), Containment, Control, Cooling, Eccs, Gases, Hydrogen, Leaks, Liquid wastes, Performance, Pumps, Radioactive wastes, Reactor licensing, Valves.

For abstract, see NSA 28 06, number 14977.

DOCKET-50423-14/GA PC$5.00/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 3. APPLICANTS' ENVIRONMENTAL REPORT, AMENDMENT 3.
18 May 73, 56p

Descriptors: (*Millstone-3 reactor, *Environment), Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10461.

DOCKET-50423-16/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Newark, N.J. Region I.
MILLSTONE NUCLEAR POWER STATION, UNIT 3. INSPECTION REPORT NO. 423/73-01.
10 May 73, 12p

Descriptors: (*Millstone-3 reactor, *Inspection), Documentation, Fabrication, Management, Personnel, Quality assurance, Reactor licensing.

For abstract, see NSA 28 06, number 14978.

DOCKET-50423-17/GA PC$14.00/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
MILLSTONE NUCLEAR POWER STATION, UNIT 3. DRAFT ENVIRONMENTAL STATEMENT.
Jun 73, 240p

Descriptors: (*Millstone-3 reactor, *Environment), Background radiation, Cost benefit analysis, Design, Ecology, Electric power, Gaseous wastes, Geology, Hydrology, Lakes, Meteorology, Monitoring, Nonradioactive wastes, Power transmission, Radioactive wastes, Reactor accidents, Reactor licensing, Reactor operation, Reactor sites, Waste disposal.

For abstract, see NSA 28 06, number 14979.

DOCKET-50423-18/GA PC$34.25/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 3. LICENSE APPLICATION, AMENDMENT 4.
11 Jul 73, 644p

Descriptors: (*Millstone-3 reactor, *Reactor safety), Containment buildings, Design basis accidents, Gaseous wastes, Leaks, Radioactive wastes, Radioactivity, Reactor licensing, Solid wastes, Transport, Waste disposal, Waste management, Wind.

For abstract, see NSA 28 06, number 14980.

DOCKET-50423-19/GA PC$16.25/MF$1.45
Millstone Point CO., Hartford, Conn.
MILLSTONE NUCLEAR POWER STATION, UNIT 3. PRELIMINARY SAFETY ANALYSIS REPORT, LICENSE APPLICATION, AMENDMENT 5.
13 Jul 73, 281p

Descriptors: (*Millstone-3 reactor, *Reactor safety), Design, Radioactive wastes, Reactor components, Reactor licensing, Reactor sites, Waste management.

For abstract, see NSA 28 06, number 14981.

DOCKET-50424-13/GA PC$13.25/MF$1.45
Georgia Power CO., Atlanta.
ALVIN W. VOGTLE NUCLEAR PLANT, UNITS 1, 2, 3, AND 4. ENVIRONMENTAL REPORT, AMENDMENT 1.
4 May 73, 224p DOCKET-50425-13, DOCKET-50426-13

Descriptors: (*Vogtle-1 reactor, *Environment), (*Vogtle-2 reactor, Environment), (*Vogtle-3 reactor, Environment), (*Vogtle-4 reactor, Environment), Reactor licensing, Reactor sites.

For abstract, see NSA 28 04, number 10462.

DOCKET-50424-15/GA PC$3.00/MF$1.45
Department of the Interior, Washington, D.C. (Usa).
ALVIN W. VOGTLE NUCLEAR PLANT, UNITS 1, 2, 3, AND 4. DRAFT ENVIRONMENTAL STATEMENT, COMMENTS OF UNITED STATES DEPARTMENT OF THE INTERIOR.
10 May 73, 2p DOCKET-50425-15, DOCKET-50426-15

Descriptors: (*Vogtle-1 reactor, *Environment), (*Vogtle-2 reactor, Environment), (*Vogtle-3 reactor, Environment), (*Vogtle-4 reactor, Environment), Excavation, Geology, Ground water, Monitoring, Radioactive wastes, Reactor licensing, Reactor sites, Waste disposal.

For abstract, see NSA 28 05, number 12457.

DOCKET-50424-16/GA PC$14.00/MF$1.45
Georgia Power CO., Atlanta.
ALVIN W. VOGTLE NUCLEAR PLANT, UNITS 1, 2, 3, AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 2.
1 Jun 73, 237p DOCKET-50425-16, DOCKET-50426-16

Descriptors: (*Vogtle-1 reactor, *Reactor safety), (*Vogtle-2 reactor, Reactor safety), (*Vogtle-3 reactor, Reactor safety), (*Vogtle-4 reactor, Reactor safety), Climates, Control elements, Design, Electricity, Excavation, Failures, Floods, Fuel elements, Ground water, Leak detectors, Leaks, Personnel, Radiation protection, Radioactivity, Reactor accidents, Reactor control systems, Reactor cooling systems, Reactor licensing, Scram, Seismic effects, Soils, Storage.

For abstract, see NSA 28 05, number 12458.

DOCKET-50424-17/GA PC$3.00/MF$1.45
Directorate of Regulatory Operations (Aec), Atlanta, Ga. (Usa). Region II.
ALVIN W. VOGTLE NUCLEAR PLANT, UNITS 1, 2, 3, AND 4. INSPECTION REPORTS NOS. 50-424/73-1, 50-425/73-1, 50-426/73-1, 50-427/73-1.
21 Jun 73, 12p DOCKET-50425-17, DOCKET-50426-17

Descriptors: (*Vogtle-1 reactor, *Inspection), (*Vogtle-2 reactor, Inspection), (*Vogtle-3 reactor, Inspection), (*Vogtle-4 reactor, Inspection), Cooling towers, Design, Fabrication, Management, Personnel, Pumps, Quality assurance, Reactor sites, Specifications, Steam condensers.

For abstract, see NSA 28 06, number 14982.

DOCKET-50424-18/GA PC$32.50/MF$1.45
Georgia Power CO., Atlanta.
ALVIN W. VOGTLE NUCLEAR PLANT, UNITS 1, 2, 3, AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 3.
3 Jul 73, 606p DOCKET-50425-18, DOCKET-50426-18

Descriptors: (*Vogtle-1 reactor, *Reactor safety), (*Vogtle-2 reactor, Reactor safety), (*Vogtle-3 reactor, Reactor safety), (*Vogtle-4 reactor, Reactor safety), Buildings, Equipment protection devices, Mechanical structures, Power, Radioactive wastes, Reactor operation, Reactor sites, Steam, Waste management.

For abstract, see NSA 28 06, number 14983.

DOCKET-50434-1/GA PC$8.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. LICENSE APPLICATION.
29 May 73, 119p DOCKET-50435-1

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Fabrication, Reactor licensing, Reactor operation.

For abstract, see NSA 28 04, number 10463.

DOCKET-50434-10/GA PC$37.25/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, AMENDMENT 1.
18 Jun 73, 704p DOCKET-50435-10

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Design, Electric power, Equipment protection devices, Quality assurance, Radiation protection, Reactor accidents, Reactor control systems, Reactor cooling systems, Reactor licensing, Reactor operation, Reactor sites, Specifications, Steam, Waste management.

For abstract, see NSA 28 06, number 14984.

DOCKET-50434-11/GA PC$10.50/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PSAR LICENSE APPLICATION, AMENDMENT 2.
10 Jul 73, 167p DOCKET-50435-11

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Buildings, Containment, Design, Leaks, Radioactive wastes, Reactor components, Reactor licensing, Reinforced concrete, Steam generators, Stress analysis, Waste disposal, Wind.

For abstract, see NSA 28 06, number 14985.

DOCKET-50434-2/GA PC$22.25/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 1.
1973, 402p DOCKET-50435-2

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Geology, Meteorology, Reactor licensing, Reactor sites, Seismology.

For abstract, see NSA 28 04, number 10464.

DOCKET-50434-3/GA PC$19.50/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 2.
1973, 347p DOCKET-50435-3

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Geology, Meteorology, Reactor licensing, Reactor sites.

For abstract, see NSA 28 05, number 12459.

DOCKET-50434-4/GA PC$27.25/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 3.
1973, 505p DOCKET-50435-4

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Configuration, Mechanical structures, Reactor licensing.

For abstract, see NSA 28 04, number 10465.

DOCKET-50434-5/GA PC$22.25/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 4.
1973, 405p DOCKET-50435-5

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Configuration, Reactor cooling systems, Reactor cores, Reactor licensing.

For abstract, see NSA 28 04, number 10466.

DOCKET-50434-6/GA PC$27.50/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 5.
1973, 510p DOCKET-50435-6

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Electrical equipment, Equipment protection devices, Reactor control systems, Reactor instrumentation, Reactor licensing.

For abstract, see NSA 28 04, number 10467.

DOCKET-50434-7/GA PC$25.25/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 6.
1973, 461p DOCKET-50435-7

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Reactor licensing, Steam generators, Steam turbines.

For abstract, see NSA 28 04, number 10468.

DOCKET-50434-8/GA PC$24.75/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 7.
1973, 453p DOCKET-50435-8

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Radiation protection, Radioactive waste disposal, Reactor accidents, Reactor licensing, Reactor operation, Testing.

For abstract, see NSA 28 04, number 10469.

DOCKET-50434-9/GA PC$19.00/MF$1.45
Virginia Electric and Power CO., Richmond.
SURRY POWER STATION, UNITS 3 AND 4. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 8.
1973, 340p DOCKET-50435-9

Descriptors: (*Surry-3 reactor, *Reactor safety), (*Surry-4 reactor, Reactor safety), Quality assurance, Reactor licensing, Reactor operation, Specifications.

For abstract, see NSA 28 04, number 10470.

DOCKET-50438-1/GA PC$3.00/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. LICENSE APPLICATION.
19 Jun 73, 4p DOCKET-50439-1

Descriptors: (*Bellefonte-1 reactor, *Reactor licensing), (*Bellefonte-2 reactor, Reactor licensing).

For abstract, see NSA 28 05, number 12460.

DOCKET-50438-10/GA PC$29.50/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 6.
19 Jun 73, 549p DOCKET-50439-10

Descriptors: (*Bellefonte-1 reactor, *Reactor safety), (*Bellefonte-2 reactor, Reactor safety), Education, Management, Nuclear power plants, Quality assurance, Reactor accidents, Reactor licensing, Shielding, Specifications, Testing, Ventilation.

For abstract, see NSA 28 06, number 14988.

DOCKET-50438-2/GA PC$7.00/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. INFORMATION PURSUANT TO 10 CFR SECTION 50.33 OF THE COMMISSION'S RULES AND REGULATIONS.
19 Jun 73, 99p DOCKET-50439-2

Descriptors: (*Bellefonte-1 reactor, *Reactor licensing), (*Bellefonte-2 reactor, Reactor licensing), Cost, Electric power, Liabilities, Management, Personnel, Power transmission.

For abstract, see NSA 28 05, number 12461.

DOCKET-50438-3/GA PC$21.50/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, VOLUME 1.
19 Jun 73, 389p DOCKET-50439-3

Descriptors: (*Bellefonte-1 reactor, *Environment), (*Bellefonte-2 reactor, Environment), Cost benefit analysis, Radioactive wastes, Reactor operation, Reactor sites.

For abstract, see NSA 28 06, number 14986.

DOCKET-50438-4/GA PC$16.75/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. DRAFT ENVIRONMENTAL STATEMENT, VOLUME 2.
19 Jun 73, 294p DOCKET-50439-4

Descriptors: (*Bellefonte-1 reactor, *Environment), (*Bellefonte-2 reactor, Environment), Aquatic ecosystems, Archaeology, Ecology, Radioactive wastes, Reactor accidents, Reactor licensing, Reactor sites, Spent fuels, Terrestrial ecosystems, Transport.

For abstract, see NSA 28 05, number 12462.

DOCKET-50438-5/GA PC$21.25/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 1.
19 Jun 73, 384p DOCKET-50439-5

Descriptors: (*Bellefonte-1 reactor, *Reactor safety), (*Bellefonte-2 reactor, Reactor safety), Design, Diagrams, Fuel densification, Geology, Hydrology, Meteorology, Reactor licensing, Reactor materials, Reactor sites, Seismology.

For abstract, see NSA 28 05, number 12463.

DOCKET-50438-6/GA PC$21.75/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 2.
19 Jun 73, 395p DOCKET-50439-6

Descriptors: (*Bellefonte-1 reactor, *Reactor safety), (*Bellefonte-2 reactor, Reactor safety), Geology, Hydrology, Reactor licensing, Reactor sites, Seismology.

For abstract, see NSA 28 05, number 12464.

DOCKET-50438-7/GA PC$31.00/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 3.
19 Jun 73, 579p DOCKET-50439-7

Descriptors: (*Bellefonte-1 reactor, *Reactor safety), (*Bellefonte-2 reactor, Reactor safety), Buildings, Computer codes, Design, Electronic equipment, Environment, Mechanical structures, Missiles, Pipes, Reactor accidents, Reactor components, Reactor licensing, Ruptures, Seismic effects, Water, Wind.

For abstract, see NSA 28 05, number 12465.

DOCKET-50438-8/GA PC$28.75/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 4.
19 Jun 73, 531p DOCKET-50439-8

Descriptors: (*Bellefonte-1 reactor, *Reactor safety), (*Bellefonte-2 reactor, Reactor safety), Reactor control systems, Reactor cooling systems, Reactor instrumentation, Safety engineering.

For abstract, see NSA 28 06, number 14987.

DOCKET-50438-9/GA PC$28.25/MF$1.45
Tennessee Valley Authority, Knoxville.
BELLEFONTE NUCLEAR PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 5.
19 Jun 73, 521p DOCKET-50439-9

Descriptors: (*Bellefonte-1 reactor, *Reactor safety), (*Bellefonte-2 reactor, Reactor safety), Air conditioning, Boron additions, Cooling, Demineralizers, Diesel engines, Electric generators, Fires, Fuel elements, Gaseous wastes, Heating, Liquid wastes, Lubrication, Materials handling, Monitoring, Pipes, Radioactive wastes, Reactor cooling systems, Solid wastes, Spent fuel storage, Spent fuels, Steam, Steam generators, Storage, Turbogenerators, Ventilation, Waste management, Water.

For abstract, see NSA 28 05, number 12466.

DOCKET-50440-1/GA PC$10.25/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. APPLICATION FOR LICENSES.
22 Jun 73, 165p DOCKET-50441-1

Descriptors: (*Perry-1 reactor, *Reactor licensing), (*Perry-2 reactor, Reactor licensing), Liabilities, Management.

For abstract, see NSA 28 06, number 14989.

DOCKET-50440-10/GA PC$13.75/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 8.
22 Jun 73, 232p DOCKET-50441-10

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Air conditioning, Bypasses, Communications, Cooling, Diesel engines, Electric generators, Electric power, Fires, Fossil fuels, Fuel assemblies, Heating, Lubrication, Materials handling, Reactor licensing, Spent fuel storage, Steam, Storage, Turbines, Ventilation, Water.

For abstract, see NSA 28 06, number 14995.

DOCKET-50440-11/GA PC$28.75/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 9.
22 Jun 73, 534p DOCKET-50441-11

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Design, Education, Gaseous wastes, Liquid wastes, Management, Monitoring, Personnel, Planning, Radiation protection, Reactor accidents, Reactor licensing, Shielding, Solid wastes, Testing, Ventilation, Waste management.

For abstract, see NSA 28 06, number 14996.

DOCKET-50440-12/GA PC$23.00/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 10.
22 Jun 73, 416p DOCKET-50441-12

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Design, Fabrication, Monitoring, Quality assurance, Reactor accidents, Reactor operation, Specifications, Testing.

For abstract, see NSA 28 06, number 14997.

DOCKET-50440-13/GA PC$23.00/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. ENVIRONMENTAL REPORT, CONSTRUCTION PERMIT STAGE, VOLUME 1.
22 Jun 73, 420p DOCKET-50441-13

Descriptors: (*Perry-1 reactor, *Environment), (*Perry-2 reactor, Environment), Electric power, Fabrication, Geology, Hydrology, Meteorology, Reactor licensing, Reactor sites.

For abstract, see NSA 28 06, number 14998.

DOCKET-50440-14/GA PC$24.25/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. ENVIRONMENTAL REPORT, CONSTRUCTION PERMIT STAGE, VOLUME 2.
22 Jun 73, 440p DOCKET-50441-14

Descriptors: (*Perry-1 reactor, *Environment), (*Perry-2 reactor, Environment), Aquatic ecosystems, Ecology, Electric power, Fabrication, Power transmission, Reactor licensing, Reactor sites, Terrestrial ecosystems, Waste management.

For abstract, see NSA 28 06, number 14999.

DOCKET-50440-15/GA PC$24.50/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. ENVIRONMENTAL REPORT, CONSTRUCTION PERMIT STAGE, VOLUME 3.
22 Jun 73, 447p DOCKET-50441-15

Descriptors: (*Perry-1 reactor, *Environment), (*Perry-2 reactor, Environment), Aquatic ecosystems, Electric power, Man, Power transmission, Radiation effects, Reactor licensing, Reactor operation, Reactor sites, Terrestrial ecosystems, Thermal pollution, Transport, Waste management.

For abstract, see NSA 28 06, number 15000.

DOCKET-50440-16/GA PC$27.50/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. ENVIRONMENTAL REPORT, CONSTRUCTION PERMIT STAGE, VOLUME 4.
22 Jun 73, 509p DOCKET-50441-16

Descriptors: (*Perry-1 reactor, *Environment), (*Perry-2 reactor, Environment), Cost, Design, Economy, Electric power, Fabrication, Monitoring, Nonradioactive wastes, Power transmission, Radioactive wastes, Reactor accidents, Reactor cooling systems, Reactor licensing, Reactor operation, Reactor sites, Waste management.

For abstract, see NSA 28 06, number 15001.

DOCKET-50440-2/GA PC$29.50/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. INFORMATION REQUESTED BY THE ATTORNEY GENERAL FOR ANTITRUST REVIEW.
22 Jun 73, 559p DOCKET-50441-2

Descriptors: (*Perry-1 reactor, *Reactor licensing), (*Perry-2 reactor, Reactor licensing), Electric power, Legal aspects.

For abstract, see NSA 28 05, number 12467.

DOCKET-50440-3/GA PC$15.25/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 1.
22 Jun 73, 264p DOCKET-50441-3

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Design, Ohio, Reactor licensing, Reactor operation, Reactor sites.

For abstract, see NSA 28 05, number 12468.

DOCKET-50440-4/GA PC$18.25/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 2.
22 Jun 73, 323p DOCKET-50441-4

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Geography, Geology, Hydrology, Meteorology, Reactor licensing, Reactor sites, Seismology, Transport.

For abstract, see NSA 28 05, number 12469.

DOCKET-50440-5/GA PC$41.25/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 3.
22 Jun 73, 781p DOCKET-50441-5

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Design, Geology, Lakes, Meteorology, Reactor licensing, Seismology, Temperature measurement, Underground, Water, Wind.

For abstract, see NSA 28 06, number 14990.

DOCKET-50440-6/GA PC$25.00/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 4.
22 Jun 73, 460p DOCKET-50441-6

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Buildings, Design, Electrical equipment, Environment, Floods, Mechanical structures, Pipes, Reactor components, Reactor licensing, Ruptures, Seismic effects, Wind.

For abstract, see NSA 28 06, number 14991.

DOCKET-50440-7/GA PC$24.50/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 5.
22 Jun 73, 450p DOCKET-50441-7

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Design, Monitoring, Neutrons, Reactor cooling systems, Reactor instrumentation, Reactor licensing.

For abstract, see NSA 28 06, number 14992.

DOCKET-50440-8/GA PC$27.00/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 6.
22 Jun 73, 497p DOCKET-50441-8

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Containment, Control rod drives, Eccs, Equipment protection devices, Fluid poison control, Pipelines, Pressurizers, Reactor control systems, Reactor instrumentation, Reactor licensing, Steam, Supports, Valves.

For abstract, see NSA 28 06, number 14993.

DOCKET-50440-9/GA PC$25.75/MF$1.45
Cleveland Electric Illuminating CO., Ohio.
PERRY NUCLEAR POWER PLANT, UNITS 1 AND 2. PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME 7.
22 Jun 73, 475p DOCKET-50441-9

Descriptors: (*Perry-1 reactor, *Reactor safety), (*Perry-2 reactor, Reactor safety), Display devices, Electric power, Equipment protection devices, Power transmission, Reactor control systems, Reactor instrumentation, Reactor licensing, Reactor shutdown, Scram.

For abstract, see NSA 28 06, number 14994.

EIR-233/GA PC$3.00/MF$1.45
Eidgenoessisches Institut fuer Reaktorforschung, Wuerenlingen (Switzerland).
ALTERNATE ENERGY CONVERSION SYSTEMS IN GCFR POWER PLANTS.
G. Sarlos. Apr 73, 9p
U.S. Sales Only.

Descriptors: (*Helium cooled reactors, *Energy conversion), (*Fbr type reactors, Energy conversion), Direct cycle cooling systems, Economics, Gas turbines, Reactor safety, Thermodynamic cycles.

For abstract, see NSA 28 04, number 10002.

EUR-4827/GA PC$5.50/MF$1.45
Ente Nazionale Per l'Energia Elettrica, Rome (Italy).
TRINO VERCELLESE NUCLEAR POWER PLANT RESEARCH PROGRAMME FOR THE DEVELOPMENT OF CLOSED-CYCLE WATER REACTOR TECHNOLOGY. ANNUAL PROGRESS REPORT NO. 5; QUARTERLY PROGRESS REPORT NO. 20.
Apr 73, 68p
U.S. Sales Only.

Descriptors: (*Selni reactor, *Reactor operation), Materials testing, Performance, Ph value, Reactivity, Reactor kinetics, Reactor noise, Research programs, Spent fuel elements, Steam generators.

For abstract, see NSA 28 05, number 12053.

EUR-4922/GA PC$4.25/MF$1.45
Societe d'Energie Nucleaire Franco-Belge des Ardennes, Chooz-Lez-Givet (France).
ARDENNES NUCLEAR POWER PLANT. ANNUAL REPORT, 1971.
May 73, 42p
In French. U.S. Sales Only.

Descriptors: (*Ardennes reactor, *Reactor maintenance), Reactor fueling, Reactor operation.

For abstract, see NSA 28 05, number 12054.

JUL-929-HT-WT/GA PC$8.50/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Kernforschungszentrum, Karlsruhe (West Germany).
NUCLEAR ENERGY AND THE ENVIRONMENT.
H. Bueker, P. Jansen, W. Sassin, and W. Schikarski. Mar 73, 126p KFK-1366
In German. U.S. Sales Only.

Descriptors: (*Surface waters, *Radioactive wastes), (*Power plants, *Environment), (*Nuclear power plants, Environment), (*Earth atmosphere, Radioactive wastes), Comparative evaluations, Contamination, Cooling, Electric power, Fossil fuels, Fuel cycle, Industry, Pollution, Radiation doses, Radiation hazards, Reprocessing, Thermal pollution, Tritium, Waste disposal, Waste heat, Wastes.

For abstract, see NSA 28 06, number 14598.

NP-19703/GA PC$5.00/MF$1.45
Commissariat a l'Energie Atomique, Paris (France).
ANNUAL REPORT, 1970.
1970, 60p
In French. U.S. Sales Only.

Descriptors: (*Cea, *Research programs), Management, Nuclear industry, Personnel, Radiation protection, Reactors, Safety.

For abstract, see NSA 28 04, number 10490.

NP-19755/GA PC$25.75/MF$1.45
European Communities, Brussels (Belgium). Commission.
SIXTH GENERAL REPORT ON THE ACTIVITIES OF THE COMMUNITIES, 1972.
Feb 73, 471p
U.S. Sales Only.

Descriptors: (*European communities, *Management), Developing countries, Economics, Energy, Legal aspects, Nuclear power, Planning.

For abstract, see NSA 28 05, number 12484.

RISO-M-1591/GA PC$5.75/MF$1.45
Danish Atomic Energy Commission, Risoe. Research Establishment.
DEVELOPMENTS IN PROCESS CONTROL COMPUTER SYSTEMS (1973--1978).
J. R. Taylor, and L. P. Goodstein. Mar 73, 73p
U.S. Sales Only.

Descriptors: (*Computers, *Control systems), (*Power plants, Control systems), (*Nuclear power plants, Control systems), Canada, Reviews, United kingdom.

For abstract, see NSA 28 06, number 15054.

RT/EC-(72)4/GA PC$5.50/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy).
OPERATION OF NUCLEAR POWER PLANTS: STATISTICAL REMARKS.
F. Maccazzola. 20 Dec 72, 70p
In Italian. U.S. Sales Only.

Descriptors: (*Nuclear power plants, *Reactor operation), Data, Electric power, Tables.

For abstract, see NSA 28 04, number 09943.

TID-3324-R1/GA PC$10.60/MF$1.45
Technical Information Center (Aec), Oak Ridge, Tenn.
TITLE LISTING OF CIVILIAN POWER REACTOR DOCKET LITERATURE IN NUCLEAR SCIENCE ABSTRACTS. VOLUMES 21--26(1967--1972).
Apr 73, 488p

Descriptors: (*Nuclear power plants, *Reactor licensing), (*Fuel reprocessing plants, *Licensing), Bibliographies, Document types, Usa.

For abstract, see NSA 28 06, number 15003.

WAPD-332/GA PC$12.75/MF$1.45
Bettis Atomic Power Lab., Pittsburgh, PA. Duquesne Light CO., Pittsburgh, PA.
SHIPPINGPORT OPERATIONS FROM INITIAL PWR CORE 2 POWER OPERATION TO POWER OPERATION AFTER FIRST REFUELING.
L. H. Kemmet, and J. A. Werling. Jun 73, 211p
Contract AT-11-1-Gen-14

Descriptors: (*Shippingport reactor, *Reactor operation), Contamination, Performance, Radioactivity, Reactor components, Reactor cores, Reactor fueling, Reactor maintenance.

For abstract, see NSA 28 06, number 14337.

WARD-5892/GA PC$3.25/MF$1.45
Westinghouse Electric Corp., Madison, PA. Advanced Reactors Div.
KEYS TO OPEN THE DOOR TO INDUSTRIAL SUCCESS OF THE LMFBR.
J. J. Taylor. 1972, 24p CONF-720817-3

Descriptors: Economics, Fbr type reactors, Reactor licensing, Reviews, Sodium cooled reactors, Standards.

For abstract, see NSA 28 06, number 14428.

WASH-1208(6-73)/GA PC$3.00/MF$1.45
Division of Reactor Development and Technology (Aec), Washington, D. C.
STATUS OF CENTRAL STATION NUCLEAR POWER REACTORS SIGNIFICANT MILESTONES.
1 Jun 73, 11p

Descriptors: (*Nuclear power plants, *Specifications), Reactor operation, Usa.

For abstract, see NSA 28 04, number 09962.

Y-DR-110/GA PC$3.00/MF$1.45
Oak Ridge Y-12 Plant, Tenn. (Usa).
NUCLEAR STANDARDS.
D. Callihan. 1973, 17p
Contract W-7405-eng-26

Descriptors: (*Nuclear industry, *Standards), Criticality, Organizing, Personnel, Planning, Safety.

For abstract, see NSA 28 04, number 08114.

18F. Radiation Shielding and Protection

CEA-CONF-2190/GA PC$3.00/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.
BEHAVIOR UNDER NEUTRON IRRADIATION OF MATERIALS INTENDED FOR THE PROTECTION OF NUCLEAR REACTORS.
M. Yvars, P. Degas, M. Quetier, and G. Rousseau. 1972, 17p CONF-721018-20
In French. U.S. Sales Only.

Descriptors: (*Graphite, *Physical radiation effects), (*Boron carbides, Physical radiation effects), (*Sodium, *Corrosive effects), (*Sodium cooled reactors, *Shielding), Chemical properties, Fast reactors, High temperature, Htgr type reactors, Mechanical properties, Neutron beams.

For abstract, see NSA 28 04, number 08543.

CONF-721018-21/GA PC$3.00/MF$1.45
Ship Research Inst., Tokai (Japan).
COMPARISON OF ONE AND TWO DIMENSIONAL DISCRETE ORDINATE CALCULATIONS WITH EXPERIMENTAL RESULTS.
T. Fuse, A. Yamaji, and T. Miura. 1972, 13p
U.S. Sales Only.

Descriptors: (*Neutron transport theory, *Discrete ordinate method), (*Water, *Neutron flux), (*Air, Neutron flux), Absorption, Accuracy, Biological shielding, Comparative evaluations, Computer codes, Cylindrical configuration, Ducts, Jrr-4 reactor, Numerical solution, One-dimensional calculations, Spherical configuration, Two-dimensional calculations.

For abstract, see NSA 28 04, number 09505.

DPSPU-72-124-3/GA PC$5.75/MF$1.45
Du Pont de Nemours (E.I.) and CO., Aiken, S. C. Savannah River Plant.
SAFETY ANALYSIS REPORT, PACKAGES SRL 4.5-TON CALIFORNIUM SHIPPING CASK (PACKAGING OF RADIOACTIVE AND FISSILE MATERIALS). FINAL REPORT.
V. Jr. Whatley, and D. J. Mahoney. Jul 73, 72p
Contract AT(07-2)-1

Descriptors: (*Casks, *Design), (*Californium 252, *Transport), (*Fissile materials, Transport), Dose rates, Polyesters, Safety standards, Shielding materials, Transport regulations.

For abstract, see NSA 28 06, number 13424.

N-72-33651/GA PC$4.00/MF$1.45
Aerojet Nuclear CO., Idaho Falls, Idaho.
GAMMA HEATING IN REFLECTOR HEAT SHIELD OF GAS CORE REACTOR.
J. H. Lofthouse, J. F. Kunze, T. E. Young, and R. C. Young. Aug 72, 37p NASA-CR-120903, ANCR-1077

Descriptors: (*Gas fueled reactors, Neutron reflectors), (*Neutron reflectors, *Heating), (*Space propulsion reactors, Neutron reflectors), (*Thermal shields, Heating), Beryllium, Beryllium oxides, Cross sections, Deuterium, Gamma radiation, Oxygen.

For abstract, see NSA 28 04, number 10036.

N-73-15722/GA PC$7.60/MF$1.45
Science Applications, Inc., la Jolla, Calif. (Usa).
ELECTRON TRANSPORT AND SPACE SHIELDING HANDBOOK. FINAL REPORT.
D. C. Shreve, and J. A. Lonergan. 14 Nov 71, 253p
NASA-CR-123998, SAI-71-559-LJ
Contract NAS8-26753

Descriptors: (*Electrons, *Transport theory), (*Space vehicles, *Shielding), Absorption, Angular distribution, Backscattering, Bremsstrahlung, Energy, Energy spectra, Matter, Photons, Targets, Thickness, Transmission.

For abstract, see NSA 28 05, number 12011.

ORNL-4869/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
SPAR, A FORTRAN PROGRAM FOR COMPUTING STOPPING POWERS AND RANGES FOR MUONS, CHARGED PIONS, PROTONS, AND HEAVY IONS.
T. W. Armstrong, and K. C. Chandler. May 73, 35p
Contract W-7405-eng-26

Descriptors: (*Tissues, *Charged-particle transport), (*Water, Charged-particle transport), (*Heavy ions, *Range), (*Muons, Range), Computer codes, Ev range, Fortran, Gev range, Kev range, Mev range, Pions minus, Pions plus, Protons, S codes, Stopping power.

For abstract, see NSA 28 04, number 09886.

Y-1191/GA PC$3.00/MF$1.45
Union Carbide Corp., Oak Ridge, Tenn. Y-12 Plant.
LITHIUM HYDRIDE AS A MOBILE NEUTRON SHIELD.
F. B. Waldrop. 24 Feb 58, 19p CONF-580101-1
Contract W-7405-eng-26

Descriptors: (*Lithium hydrides, *Shields), (*Shielding materials, Lithium hydrides), Efficiency, Fabrication, Neutrons, Physical properties, Transport.

For abstract, see NSA 28 05, number 11144.

18G. Radioactive Wastes and Fission Products

AEC-tr-7433/GA PC$4.00/MF$1.45
Staatliche Zentrale fuer Strahlenschutz, Berlin (East Germany).
FLOCCULATION AND SEDIMENTATION OF SUSPENDED RADIOACTIVE CONTAMINANTS IN WASTE WATER BY CONTROL OF THE ZETA POTENTIAL.
K. H. Johannsen. 15p
Translated from report SZS--3/71, pp 2-19.

Descriptors: (*Water, *Decontamination), (*Radioactive waste processing, *Flocculation), Aluminium sulfates, Aqueous solutions, Colloids, Electric potential, Liquid wastes, Organic polymers, Sedimentation, Suspensions.

For abstract, see NSA 28 06, number 12763.

AEC-tr-7434/GA PC$4.00/MF$1.45
Staatliche Zentrale fuer Strahlenschutz, Berlin (East Germany).
RADIOACTIVE WASTES FROM REPROCESSING OF IRRADIATED FAST REACTOR FUELS.
G. Sachse, and G. Anders. 11p
Translated from report SZS--3/71, pp 20-32.

Descriptors: (*Radioactive waste processing, *Reviews), Fast reactors, Gaseous wastes, Liquid wastes, Radioactive waste disposal, Reprocessing, Silicates, Solid wastes, Spent fuels, Vitrification.

For abstract, see NSA 28 06, number 12764.

ARH-SA-162/GA PC$3.25/MF$1.45
Atlantic Richfield Hanford CO., Richland, Wash.
STORAGE OF RADIOACTIVE HIGH-LEVEL WASTE.
J. W. Barnes. 22p

Descriptors: (*Radioactive wastes, *Storage), Cooling towers, Design, Water.

For abstract, see NSA 28 06, number 13398.

BNWL-CC-649/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
DISPOSAL CHARACTERISTICS OF PLUTONIUM AND AMERICIUM IN A HIGH SALT ACID WASTE.
B. F. Hajek, and K. C. Knoll. 10 Jun 66, 13p
Contract AT(45-1)-1830

Descriptors: (*Radioactive waste disposal, *Underground disposal), (*Plutonium, Underground disposal), (*Americium, Underground disposal).

For abstract, see NSA 28 04, number 08831.

BNWL-1741/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
RESEARCH AND DEVELOPMENT ACTIVITIES WASTE FIXATION PROGRAM. QUARTERLY PROGRESS REPORT, DECEMBER 1972--MARCH 1973.
A. M. Platt. Apr 73, 38p
Contract AT(45-1)-1830

Descriptors: (*Radioactive waste processing, *Solidification), Boron silicates, Glass, Liquid wastes, Research programs.

For abstract, see NSA 28 05, number 10767.

CONF-730417-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
NUCLEAR WASTE DISPOSAL.
W. D. Burch. 1973, 18p

Descriptors: (*Radioactive waste disposal, *Underground disposal), Reviews, Safety, Salt deposits, Storage.

For abstract, see NSA 28 04, number 08832.

DUN-8148/GA PC$3.00/MF$1.45
Douglas United Nuclear, Inc., Richland, Wash.
COMPILATION OF A TRITIUM CONTROL TECHNOLOGY STATUS REPORT.
A. E. Engler. 21 Mar 73, 8p

Descriptors: (*N-reactor, *Radiation monitoring), (*Tritium, *Materials handling), Containment, Radioactive waste disposal.

For abstract, see NSA 28 04, number 10032.

EUR-4951/GA PC$5.00/MF$1.45
Societa Ricerche Impianti Nucleari, Saluggia (Italy).
MIGRATION OF FISSION PRODUCTS IN NEAR ISOTROPIC PYROCARBON. FINAL REPORT.
B. Chinaglia, G. Mosca, and H. Walther. May 73, 56p
U.S. Sales Only.

Descriptors: (*Barium, *Diffusion), (*Xenon, Diffusion), (*Zirconium, Diffusion), (*Cesium, Diffusion), Fission products, High temperature, Microstructure, Porosity, Pyrolytic carbon, Very high temperature.

For abstract, see NSA 28 04, number 08783.

GEPP-104/GA PC$3.25/MF$1.45
General Electric CO., St. Petersburg, Fla. Neutron Devices Dept.
TRITIUM CONTROL TECHNOLOGY.
W. E. Ward. 16 Jul 73, 25p
Contract AT(29-2)-656

Descriptors: (*Tritium, *Radiation monitoring), (*Radioactive waste processing, *Gaseous wastes), Air, Gloveboxes, Liquid wastes, Liquid wastes, Radioactive waste disposal, Water.

For abstract, see NSA 28 06, number 12765.

GERHTR-84/GA PC$3.50/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Institut fuer Chemische Technologie.
INTERIM STORAGE AND SOLIDIFICATION FOR THOREX-TYPE FISSION PRODUCT SOLUTIONS.
St. Halaszovich, M. Laser, K. H. Merz, K. H. Rattay, and S. Storch. 1972, 26p
U.S. Sales Only.

Descriptors: (*Radioactive wastes, *Solidification), Flowsheets, Liquid wastes, Radioactive waste disposal, Storage.

For abstract, see NSA 28 04, number 08833.

KFK-1789/GA PC$5.00/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany).
SEPARATION, TREATMENT, AND DISPOSAL OF FISSION PRODUCT NOBLE GASES FROM NUCLEAR INSTALLATIONS.
W. Guber, G. Rudolph, and J. Saidl. Apr 73, 56p
In German. U.S. Sales Only.

Descriptors: (*Krypton, *Radioactive waste disposal), (*Xenon, Radioactive waste disposal), Radioactive waste processing, Radioisotopes, Separation processes.

For abstract, see NSA 28 04, number 08834.

LA-5281-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
TRANSURANIC WASTE RESEARCH AND DEVELOPMENT PROGRAM.
E. B. Fowler, J. L. Warren, K. A. Pashman, and J. W. Healy. May 73, 26p
Contract W-7405-eng-36

Descriptors: (*Radioactive wastes, *Research programs), (*Transuranium elements, Radioactive wastes), Solid wastes, Storage, Waste management.

For abstract, see NSA 28 05, number 11365.

LA-5286-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
UNDERGROUND MOVEMENT OF TRITIUM FROM SOLID-WASTE STORAGE SHAFTS.
W. D. Purtymun. May 73, 7p
Contract W-7405-eng-36

Descriptors: (*Tritium, *Diffusion), (*Soils, *Radionuclide migration), (*Radioactive waste disposal, *Underground disposal), Contamination, Rocks, Solid wastes.

For abstract, see NSA 28 06, number 12865.

LFEN-RI-6/GA PC$3.25/MF$1.45
Junta de Energia Nuclear, Sacavem (Portugal). Laboratorio de Fisica E Engenharia Nucleares.
MANAGEMENT OF THE LIQUID RADIOACTIVE WASTE OF LFEN.
F. P. C. Sequeira. 1972, 25p
In Portuguese. U.S. Sales Only.

Descriptors: (*Radioactive wastes, *Waste management), Control, Liquid wastes, Portugal.

For abstract, see NSA 28 05, number 11361.

LFEN-RI-7/GA PC$5.75/MF$1.45
Junta de Energia Nuclear, Sacavem (Portugal). Laboratorio de Fisica E Engenharia Nucleares.
ANALYSIS OF THE PROJECT FOR RADIOACTIVE WASTE FIXATION TREATMENT WORKED OUT IN DETAIL BY THE FIRM POTASSE AND ENGRAIS CHIMIQUES AND THE LABORATORY OF PHYSICS AND NUCLEAR ENGINEERING.
F. P. C. Sequeira. 1972, 72p
In Portuguese. U.S. Sales Only.

Descriptors: (*Radioactive waste processing, *Liquid wastes), Economics, Solid wastes.

For abstract, see NSA 28 04, number 08023.

ORNL-TM-3884/GA PC$6.75/MF$1.45
Oak Ridge National Lab., Tenn.
MIGRATION OF A CLASS OF FISSION PRODUCTS (NOBLE METALS) IN THE MOLTEN-SALT REACTOR EXPERIMENT.
R. J. Kedl. Dec 72, 93p
Contract W-7405-eng-26

Descriptors: (*Msre reactor, *Fission products), Antimony, Graphite moderator, Hastelloys, Mass transfer, Molybdenum, Niobium, Pipes, Pumps, Ruthenium, Tellurium, Uranium 233, Uranium 235.

For abstract, see NSA 28 04, number 10024.

ORNL-TM-4242/GA PC$8.25/MF$1.45
Oak Ridge National Lab., Tenn.
DESIGN AND ANALYSIS OF THE NEW BRUNSWICK LABORATORY HIGH-LEVEL WASTE CASK.
J. H. Evans. Jun 73, 123p
Contract W-7405-eng-26

Descriptors: (*Radioactive wastes, *Transport), (*Casks, *Design), Safety, Testing.

For abstract, see NSA 28 05, number 11368.

ORNL-TM-4274/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
RADIOACTIVE GAS STORAGE TANK DISCHARGE MODE FOR MINIMAL ENVIRONMENTAL IMPACT.
C. D. Baumann. Jul 73, 12p
Contract W-7405-eng-26

Descriptors: (*Radioactive waste disposal, *Environment), Gaseous wastes, Radioactive waste processing, Tanks.

For abstract, see NSA 28 06, number 13399.

ORNL-tr-2684-A/GA PC$5.00/MF$1.45
DISPOSAL OF RADIOACTIVE WASTES FROM NUCLEAR POWER PLANTS. PART 1. TEXT. FINAL REPORT FOR THE PERIOD JANUARY 1, 1970--DECEMBER 31, 1971.
H. Witte, J. Herzog, and J. Christ. 58p
Translated from a German report.

Descriptors: (*Nuclear power plants, *Waste management), (*Radioactive wastes, Waste management), Containers, Evaporation, German federal republic, Salt deposits, Solidification, Storage, Transport.

For abstract, see NSA 28 06, number 13400.

ORO-4067-4/GA PC$10.60/MF$1.45
Virginia Inst. Of Marine Science, Gloucester Point.
THERMAL EFFECTS OF THE SURRY NUCLEAR POWER PLANT ON THE JAMES RIVER, VIRGINIA. PART III. RESULTS OF MONITORING PHYSICAL PARAMETERS OF THE ENVIRONMENT PRIOR TO PLANT OPERATION. SPECIAL REPORT IN APPLIED MARINE SCIENCE AND OCEAN ENGINEERING NUMBER 33.
E. A. Shearls, S. N. Chia, W. J. Jr. Hargis, C. S. Fang, and R. N. Lobecker. Feb 73, 363p
Contract AT(40-1)-4067

Descriptors: (*Surry-1 reactor, *Thermal effluents), (*Surry-2 reactor, Thermal effluents), Chesapeake bay, Environment, Estuaries, Medium temperature, Rivers, Salinity, Thermal pollution, Waste heat.

For abstract, see NSA 28 05, number 12147.

RFP-2016/GA PC$4.00/MF$1.45
Dow Chemical U.S.a., Golden, Colo. Rocky Flats Div.
FLUID BED INCINERATION.
D. L. Ziegler, A. J. Johnson, and L. J. Meile. 8 Jun 73, 13p
Contract AT(29-1)-1106

Descriptors: (*Radioactive waste processing, *Combustion), Fluidized bed, Gaseous wastes, Hydrochloric acid, Incinerators, Pvc, Sodium carbonates, Solid wastes.

For abstract, see NSA 28 06, number 12767.

RT/PROT-(72)8/GA PC$5.00/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy).
REVISION OF THE RITMO REACTOR HAZARDS REPORT: NEW CALCULATION OF THE MAXIMUM CREDIBLE ACCIDENT AND HYPOTHESIS OF FISSION PRODUCTS RELEASE.
A. Moccaldi, and E. Pedretti. 9 Dec 72, 56p
In Italian. U.S. Sales Only.

Descriptors: (*Ritmo reactor, *Maximum credible accident), Computer codes, Containment, Containment buildings, Contamination, Environment, Excursions, Fission products, Numerical solution, Radiation hazards, Reactor operation, Reactor safety.

For abstract, see NSA 28 06, number 14600.

TID-26337/GA PC$6.00/MF$1.45
Syracuse Univ., N.Y. (Usa). Dept. Of Chemical Engineering and Materials Science.
SEPARATION OF KRYPTON AND XENON FROM REACTOR ATMOSPHERES BY SELECTIVE PERMEATION. SECOND COMPREHENSIVE PROGRESS REPORT, JANUARY 1, 1971--JUNE 30, 1972.
S. A. Stern, S. K. Sen, and A. K. Rao. Mar 73, 77p
Contract AT(30-1)-4057

Descriptors: (*Krypton, *Separation processes), (*Xenon, Separation processes), Argon, Carbon dioxide, Cellulose, Containment, Cover gas, Diffusion, Fbr type reactors, Gases, Membranes, Molten salt reactors, Nitrogen, Oxygen, Permeability, Sodium cooled reactors, Solubility.

For abstract, see NSA 28 04, number 08041.

18H. Radioactivity

ANL-Trans-943/GA PC$3.50/MF$1.45
Commissariat a l'Energie Atomique, Cadarache (France). Centre d'Etudes Nucleaires.
ROLE OF ORGANIC MATERIALS IN A WATER COURSE WITH RESPECT TO RADIOACTIVE CONTAMINATION METHOD OF EXTRACTION, FRACTIONATION AND IDENTIFICATION OF ORGANIC CONSTITUENTS BY SPECTROSCOPY AND THEIR AFFINITY TO RADIONUCLIDES.
J. Faure. Aug 72, 27p
Translation of CEA-R--4335.

Descriptors: (*Sediments, *Radionuclide migration), (*Cerium 141, *Diffusion), (*Barium 133, Diffusion), (*Ruthenium 106, Diffusion), Cesium 137, Chemical reactions, Cobalt 60, Contamination, Ion exchange, Manganese 54, Organic compounds, Sodium hydroxides, Solvent extraction, Water, Zinc 65.

For abstract, see NSA 28 04, number 08161.

BNL-17874/GA PC$4.75/MF$1.45
Brookhaven National Lab., Upton, N. Y.
1972 ENVIRONMENTAL MONITORING REPORT.
A. P. Hull. May 73, 53p

Descriptors: (*Bnl, *Radiation monitoring), (*Environment, *Radioactivity), Grass, Ground water, Milk, Soils, Surface air, Surface waters.

For abstract, see NSA 28 05, number 10854.

BNWL-CC-995/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
SOIL RADIONUCLIDE ADSORPTION AND PARTICULATE FILTRATION IN AN N-AREA SOIL.
B. L. Carlile, and B. F. Hajek. 18 Jan 67, 16p
Contract AT(45-1)-1830

Descriptors: (*Cesium 137, *Diffusion), (*Strontium 90, Diffusion), (*Soils, *Radionuclide migration), (*Radioactive waste disposal, *Underground disposal), Boundary layers, Chemical properties, Hapo, Leaks.

For abstract, see NSA 28 04, number 08131.

BNWL-SA-4534/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
ANALYTICAL TECHNIQUE FOR DISTRIBUTING AIR SAMPLING LOCATIONS AROUND NUCLEAR FACILITIES.
D. A. Waite. May 73, 12p CONF-730603-9

Descriptors: (*Radiation monitoring, *Air samplers), Distribution, Environment, Nuclear industry.

For abstract, see NSA 28 06, number 12861.

BNWL-1727(Add.)/GA PC$7.75/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
ENVIRONMENTAL SURVEILLANCE AT HANFORD FOR CY-1972.
P. E. Bramson, and J. P. Corley. Apr 73, 112p
Contract AT(45-1)-1830

Descriptors: (*Hapo, *Environment), Data, Radiation monitoring, Radioactivity, Tables.

For abstract, see NSA 28 04, number 08138.

BNWL-1737/GA PC$3.00/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
RADIOLOGICAL STATUS OF THE GROUNDWATER BENEATH THE HANFORD PROJECT, JANUARY--JUNE 1972.
K. L. Jr. Kipp. May 73, 31p
Contract AT(45-1)-1830

Descriptors: (*Ground water, *Radiation monitoring), (*Hapo, Ground water), (*Ruthenium 106, Radiation monitoring), (*Rhodium 106, Radiation monitoring), Beta sources, Boreholes, Diffusion, Environment, Ions, Levels, Monitoring, Nitrates, Radioactive waste disposal, Radionuclide migration, Tritium, Underground disposal, Uranium.

For abstract, see NSA 28 05, number 10872.

CEA-CONF-2016/GA PC$5.00/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.

PROGRAM OF IRRADIATION: PI. CATALOG OF SPECTRA AND CALCULATION OF IRRADIATION PARAMETER.
P. Bouvard, M. Cance, and J. P. Genthon. 8 Jun 71, 58p CONF-710663-1
In French. U.S. Sales Only.

Descriptors: (*Neutron flux, *Irradiation), (*Neutron spectra, *Tables), (*Computer codes, *P codes), (*Radiation effects, Computer codes), Cross sections, Energy spectra, Fast neutrons, Fast reactors, Fission spectra, Graphite moderated reactors, Heavy water moderated reactors, Neutron beams, Neutron dosimetry, Water moderated reactors.

For abstract, see NSA 28 05, number 11861.

DOCKET-700364-2/GA PC$15.75/MF$1.45
Nuclear Materials and Equipment Corp., APOLLO, PA.
NUMEC TYPE II FACILITY. ENVIRONMENTAL REPORT.
5 Mar 73, 271p

Descriptors: (*Fuel fabrication plants, *Environment), Accidents, Economics, Operation, Radiation monitoring, Site selection.

For abstract, see NSA 28 06, number 12875.

DOCKET-700371-1/GA PC$23.50/MF$1.45
United Nuclear Corp., Montville, Conn. (Usa).
NAVAL PRODUCTS DIVISION. ENVIRONMENTAL REPORT.
21 Feb 73, 427p

Descriptors: (*Fuel fabrication plants, *Environment), Accidents, Operation, Site selection.

For abstract, see NSA 28 06, number 12876.

DPSPU-73-30-1/GA PC$3.50/MF$1.45
Du Pont de Nemours (E.I.) and CO., Aiken, S. C. Savannah River Plant.
ENVIRONMENTAL MONITORING IN THE VICINITY OF THE SAVANNAH RIVER PLANT. ANNUAL REPORT FOR 1972.
1973, 27p

Descriptors: (*Savannah river plant, *Environment), (*Tritium, *Radiation monitoring), (*Cesium 137, Radiation monitoring), Diffusion, Radioactive waste disposal, Radionuclide migration, Savannah river, Strontium 90, Water pollution.

For abstract, see NSA 28 06, number 12877.

EGG-1183-1552/GA PC$7.25/MF$1.45
Eg and G, Inc., Las Vegas, Nev.
RADIOLOGICAL SURVEY OF THE NEVADA TEST SITE. (SURVEY PERIOD: 1970--1971). TECHNICAL REPORT NO. L-1064.
1 Aug 72, 104p

Descriptors: (*Gamma sources, *Radiation monitoring), (*Nevada test site, *Aerial monitoring), Gamma spectra.

For abstract, see NSA 28 04, number 08149.

HASL-274/GA PC$7.60/MF$1.45
Health and Safety Lab. (Aec), New York.
FALLOUT PROGRAM QUARTERLY SUMMARY REPORT, MARCH 1, 1973--JUNE 1, 1973.
E. P. Jr. Hardy. 1 Jul 73, 196p

Descriptors: (*Plutonium, *Diffusion), (*Soils, *Radionuclide migration), (*Strontium 89, *Radiation monitoring), (*Strontium 90, Radiation monitoring), Australia, Central america, North america, Radioactivity, South america, Stratosphere, Atlantic ocean, Fallout, Global fallout, Adults, Cesium 137, Diet, Illinois, Infants, Man, California, New york, New york city, Quantity ratio, Skeleton, Environment, Nuclear power plants, Taiwan.

For abstract, see NSA 28 05, number 10857.

HASL-274(App.)/GA PC$10.00/MF$1.45
Health and Safety Lab. (Aec), New York.
FALLOUT PROGRAM QUARTERLY SUMMARY REPORT, MARCH 1, 1973--JUNE 1, 1973.
1 Jul 73, 440p

Descriptors: (*Strontium 89, *Radiation monitoring), (*Strontium 90, Radiation monitoring), (*Beryllium 7, Radiation monitoring), (*Manganese 54, Radiation monitoring), Fallout deposits, Global fallout, Cadmium 109, Cerium 141, Cerium 144, Cesium 137, Gamma sources, Iron 55, Lead, Plutonium 238, Plutonium 239, Radioactivity, Surface air, Zirconium 95, Drinking water, Milk, New york city.

For abstract, see NSA 28 05, number 10860.

HEDL-TME-73-36/GA PC$4.00/MF$1.45
Hanford Engineering Development Lab., Richland, Wash.
CRITERIA FOR CRITICALITY SAFETY LIMITS AND CONTROLS AT HANFORD ENGINEERING DEVELOPMENT LABORATORY.
J. N. Paglieri, and C. A. Rogers. Apr 73, 19p
Contract AT(45-1)-2170

Descriptors: (*Uranium 235, Criticality), (*Uranium 233, Criticality), (*Plutonium 239, Criticality), (*Criticality, *Fissionable materials), Control, Storage.

For abstract, see NSA 28 05, number 11364.

N-72-24728/GA PC$4.00/MF$1.45
Teledyne Brown Engineering, Huntsville, Ala. (Usa).
NUCLEAR RADIATION ANALYSIS. SUMMARY REPORT.
R. J. Knies, N. R. Byrn, and H. T. Smith. Feb 72, 48p NASA-CR-123636, SE-SSL-1476
Contract NAS8-26557

Descriptors: (*Cosmic radiation, *Shielding), (*Neutrons, Shielding), (*Gamma radiation, Shielding), Bremsstrahlung, Neutron transport, Numerical solution, Photon transport, Photons.

For abstract, see NSA 28 05, number 12019.

NERC-LV-539-23/GA PC$3.00/MF$1.45
National Environmental Research Center, Las Vegas, Nev. (Usa).
ENVIRONMENTAL MONITORING REPORT FOR THE NEVADA TEST SITE AND OTHER TEST AREAS USED FOR UNDERGROUND NUCLEAR DETONATIONS, JANUARY--DECEMBER 1972.
May 73, 143p
Contract AT(26-1)-539

Descriptors: (*Xenon 133, *Radiation monitoring), (*Plutonium 239, Radiation monitoring), (*Cesium 137, Radiation monitoring), (*Iodine 131, Radiation monitoring), Air, Air samplers, Dosemeters, Environment, Fallout, Gamma sources, Human populations, Hydrology, Milk, Nevada test site, Nuclear explosions, Radiation doses, Radiation protection, Radioactive wastes, Radionuclide migration, Safety standards, Sampling, Seasonal variations, Soils, Strontium 90, Surface waters, Tritium, Underground explosions, Water.

For abstract, see NSA 28 05, number 10858.

NIRS-RSD-34/GA PC$4.00/MF$1.45
National Inst. Of Radiological Sciences, Chiba (Japan).
RADIOACTIVITY SURVEY DATA IN JAPAN.
Feb 72, 6p
U.S. Sales Only.

Descriptors: (*Radiation monitoring, *Japan), Data, Leading abstract, Radioactivity.

For abstract, see NSA 28 05, number 10861.

NIRS-RSD-36/GA PC$3.75/MF$1.45
National Inst. Of Radiological Sciences, Chiba (Japan).
RADIOACTIVITY SURVEY DATA IN JAPAN.
Aug 72, 35p
U.S. Sales Only.

Descriptors: (*Strontium 89, *Radiation monitoring), (*Strontium 90, Radiation monitoring), (*Zirconium 95, Radiation monitoring), (*Niobium 95, Radiation monitoring), Cerium 141, Cerium 144, Cesium 137, Dusts, Radioactivity, Ruthenium 103, Ruthenium 106, Beverages, Fallout, Fallout deposits, Milk, Powders, Rainwater, Rice, Bone tissues, Japan, Man, Wheat.

For abstract, see NSA 28 05, number 10866.

NIRS-RSD-37/GA PC$3.00/MF$1.45
National Inst. Of Radiological Sciences, Chiba (Japan).
RADIOACTIVITY SURVEY DATA IN JAPAN.
Nov 72, 20p
U.S. Sales Only.

Descriptors: (*Strontium 90, *Radiation monitoring), (*Cesium 137, Radiation monitoring), (*Soils, *Radioactivity), (*Drinking water, Radioactivity), Japan, Milk, Rainwater, Vegetables.

For abstract, see NSA 28 04, number 08158.

NP-19751/GA PC$3.00/MF$1.45
Zentralanstalt fuer Meteorologie und Geodynamik, Vienna (Austria).
THREE HOUR MEASUREMENT OF THE RADIOACTIVITY IN THE ATMOSPHERE CLOSE TO THE EARTH IN THE YEAR 1972.
1972, 13p
In German. U.S. Sales Only.

Descriptors: (*Earth atmosphere, *Radioactivity), (*Austria, Radioactivity), Beta sources, Environment, Radiation monitoring, Surface air, Tables.

For abstract, see NSA 28 04, number 08151.

NP-19753/GA PC$3.00/MF$1.45
Zentralanstalt fuer Meteorologie und Geodynamik, Vienna (Austria).
MEASUREMENT OF THE RADIOACTIVITY IN THE ATMOSPHERE IN THE YEAR 1972.
1972, 13p
In German. U.S. Sales Only.

Descriptors: (*Earth atmosphere, *Radioactivity), (*Austria, Radioactivity), Environment, Radiation monitoring, Tables.

For abstract, see NSA 28 04, number 08152.

ORO-3944-6/GA PC$3.25/MF$1.45
Miami Univ., Fla. Rosenstiel School of Marine and Atmospheric Sciences.
STUDY OF TRITIATED HYDROGEN AND ITS COMPOUNDS IN THE ENVIRONMENT. PROGRESS REPORT, AUGUST 15, 1972--APRIL 15, 1973.
H. G. Oestlund. 1973, 25p
Contract AT(40-1)-3944

Descriptors: (*Tritium, *Radiation monitoring), (*Earth atmosphere, Radiation monitoring), Diffusion, Environment, Fallout, Hydrogen isotopes, Levels, Nuclear explosions, Radionuclide migration, Sampling, Seasonal variations, Stratosphere,

Time dependence, Tritium compounds, Troposphere, Underground explosions.

For abstract, see NSA 28 04, number 08153.

PEL-208/GA PC$3.25/MF$1.45
Atomic Energy Board, Pelindaba, Pretoria (South Africa).
ENVIRONMENTAL RADIOACTIVITY AT THE NATIONAL NUCLEAR RESEARCH CENTRE, PELINDABA. REPORT FOR THE YEAR 1971.
D. Van As, and C. M. Vleggaar. Dec 72, 21p
U.S. Sales Only.

Descriptors: (*Iodine 131, *Radiation monitoring), (*Cesium 137, Radiation monitoring), (*Strontium 90, Radiation monitoring), Radioactivity, South africa, Milk, Potassium 40, Beta sources, Drinking water, Fishes, Sediments, Surface waters, Barium 140, Cerium 141, Cerium 144, Fallout deposits, Ruthenium 103, Ruthenium 106, Surface air, Zirconium 95, Cobalt 60, Liquid wastes, Sodium 22, Zinc 65.

For abstract, see NSA 28 05, number 10867.

PNE-WW-28/GA PC$3.50/MF$1.45
Eberline Instrument Corp., Santa Fe, N. Mex. Dept. Of Nuclear Sciences.
ENVIRONMENTAL MONITORING REPORT: PERIOD COVERING NOVEMBER 1, 1972--JANUARY 31, 1973.
1973, 26p

Descriptors: (*Beta sources, *Radiation monitoring), (*Tritium, Radiation monitoring), (*Strontium 90, Radiation monitoring), (*Gamma sources, Radiation monitoring), Radioactivity, Wagon wheel event, Milk, Plants, Earth atmosphere, Atmospheric precipitations, Drinking water, Ground water, Surface waters, Antelopes, Birds, Deer, Man, Urine.

For abstract, see NSA 28 05, number 10868.

SCPRI(RM)-12-1972/GA PC$3.00/MF$1.45
Service Central de Protection Contre les Rayonnements Ionisants, le Vesinet (France).
REPORT OF ACTIVITY, DECEMBER 1972.
1972, 16p
In French. U.S. Sales Only.

Descriptors: (*France, *Radiation monitoring), (*Environment, *Radioactivity), Sampling.

For abstract, see NSA 28 04, number 08139.

SCPRI(RM)-12-1972(Suppl.)/GA PC$3.50/MF$1.45
Service Central de Protection Contre les Rayonnements Ionisants, le Vesinet (France).
ANNEX TO MONTHLY REPORT, DECEMBER 1972. DETAIL OF RESULTS OF MEASUREMENT.
1972, 29p
In French. U.S. Sales Only.

Descriptors: (*France, *Radiation monitoring), (*Environment, *Radioactivity), Tables.

For abstract, see NSA 28 04, number 08140.

UCRL-74424/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
ENVIRONMENTAL LEVELS OF RADIOACTIVITY IN LIVERMORE VALLEY SOILS.
C. L. Lindeken, P. H. Gudiksen, J. W. Meadows, K. O. Hamby, and L. R. Anspaugh. 16 Apr 73, 16p
CONF-730603-3

Descriptors: (*Lawrence livermore laboratory, *Radiation monitoring), (*Soils, Radiation monitoring), (*Plutonium 239, Radiation monitoring), (*Plutonium 238, Radiation monitoring), Americium 241, Bismuth 214, Cesium 137, Diffusion, Environment, Fallout deposits, Gamma sources, Gaseous wastes, Lead 212, Natural radioactivity, Potassium 40, Radioactive waste disposal, Radionuclide migration, Stack disposal, Strontium 90.

For abstract, see NSA 28 05, number 10871.

18I. Reactor Engineering and Operation

AAEC/E-252/GA PC$3.50/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
DESIGN OF IRRADIATION EXPERIMENTS FOR MATERIALS TESTING REACTORS.
R. S. McAneny. Jan 73, 28p
U.S. Sales Only.

Descriptors: (*Hifar reactor, *Reactor experimental facilities), (*Materials testing reactors, Reactor experimental facilities), Design, High temperature, Irradiation capsules, Neutron flux.

For abstract, see NSA 28 06, number 14521.

AECL-4427/GA PC$3.25/MF$1.45
Atomic Energy of Canada LTD., Chalk River (Ontario).
AECL RESEARCH AND DEVELOPMENT IN ENGINEERING.
1972, 24p
U.S. Sales Only.

Descriptors: (*Aecl, *Research programs), Leading abstract.

For abstract, see NSA 28 05, number 12062.

AEEW-R-846/GA PC$5.50/MF$1.45
Atomic Energy Establishment, Winfrith (England).
JOSHUA II: A GENERAL WATER REACTOR THREE-DIMENSIONAL COUPLED NUCLEAR HYDRAULIC CALCULATION SCHEME.
D. W. G. Harris. Feb 73, 70p
U.S. Sales Only.

Descriptors: (*Sghwr reactor, *Hydraulics), (*Computer codes, *J codes), Burnup, Coolants, Finite difference method, Fluid flow, Fortran, Fuel cycle, Multigroup theory, Neutron diffusion equation, Neutron flux, Nuclear materials management, Reactor kinetics, Three-dimensional calculations.

For abstract, see NSA 28 05, number 12066.

AI-AEC-13060/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
LMFBR SAFETY PROGRAMS. QUARTERLY TECHNICAL PROGRESS REPORT, JANUARY--MARCH 1973.
15 May 73, 17p
Contract AT(04-3)-824

Descriptors: (*Fbr type reactors, Reactor safety), (*Sodium cooled reactors, Reactor safety), (*Sodium, *Fires), (*Reactor safety, *Research programs), Combustion, Leaks, Oxygen, Pressure dependence, Reactor accidents, S codes, Sodium oxides, Temperature dependence, Time dependence.

For abstract, see NSA 28 06, number 14578.

AI-AEC-13080/GA PC$4.50/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
ZIRCONIUM HYDRIDE REACTOR CONTROL DRIVE ACTUATOR DEVELOPMENT. SUMMARY REPORT.
L. E. Donelan. 30 Jun 73, 50p
Contract AT(04-3)-701

Descriptors: (*S8 reactor, Control rod drives), (*Control rod drives, *Design), (*S10 reactor, Control rod drives), (*Snap reactors, Control rod drives), High temperature, Neutron reflectors, Performance, Reactor control systems, Reliability, Scram, Testing.

For abstract, see NSA 28 06, number 14832.

BMFT-FBK-73-4/GA PC$21.75/MF$1.45
Allgemeine Elektricitaets-Gesellschaft, Aeg-Telefunken, Grosswelzheim (West Germany).
SODIUM-COOLED HIGH GAIN BREEDER. REFERENCE-STUDY.
B. Affeldt, F. Amon, and K. H. Behme. Apr 73, 395p
In German. U.S. Sales Only.

Descriptors: (*Fbr type reactors, *Design), (*Sodium cooled reactors, Design), (*Fuel pins, Design), Breeding ratio, Fuel cans, Optimization, Plutonium carbides, Reactor cores, Specifications, Stainless steel-316, Uranium carbides.

For abstract, see NSA 28 06, number 14397.

BNWL-CC-2131/GA PC$3.50/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
COMMENTS ON MASS TRANSPORT AND SCALE-UP PROBLEMS IN CIRCULATING SODIUM SYSTEMS.
D. H. Lester. 1 May 69, 27p
Contract AT(45-1)-1830

Descriptors: (*Sodium cooled reactors, *Reactor cooling systems), (*Fbr type reactors, Reactor cooling systems), Corrosion, Deposits, Functional models, Liquid flow, Mass transfer, Sodium.

For abstract, see NSA 28 04, number 10001.

BNWL-1736/GA PC$13.75/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
MEASUREMENT OF TURBULENT VELOCITY, INTENSITY AND SCALE IN ROD BUNDLE FLOW CHANNELS.
D. S. Rowe. May 73, 233p
Contract AT(45-1)-1830

Descriptors: (*Water cooled reactors, Fuel channels), (*Fuel channels, *Turbulent flow), Fluid flow, Fuel element clusters, Geometry, Hydraulics, Mixing, Reynolds number, Turbulence, Velocity.

For abstract, see NSA 28 04, number 10173.

CEA-N-1570/GA PC$6.25/MF$1.45
Commissariat a l'Energie Atomique, Cadarache (France). Centre d'Etudes Nucleaires.
NUCLEAR TESTS IN AIR FOR THE VANDELLOS POWER PLANT.
M. Gomolinski, F. Morier, D. Menessier, A. Pedel, and J. Duco. Nov 72, 84p
In French. U.S. Sales Only.

Descriptors: (*Vandelos reactor, *Reactor start-up), Air, Control rod worths, Critical pressure, Neutron flux, Neutron monitors, Reactivity, Reactor control systems, Reactor kinetics, Reactor safety, Testing.

For abstract, see NSA 28 06, number 14354.

CEA-N-1613/GA PC$4.00/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.

LIQUID HYDROGEN LOOP: EL SUB 3 REACTOR--H SUB 5 BEAM. WORKING INSTRUCTIONS FOR THE INSTALLATION.
B. Farnoux. Mar 73, 40p
In French. U.S. Sales Only.

Descriptors: (*El-3 reactor, *In pile loops), Accidents, Alarm systems, Control systems, Cryogenics, Hydrogen, Leaks, Liquids, Monitoring, Operation, Pipes, Recommendations, Safety, Seals.

For abstract, see NSA 28 06, number 14523.

CONF-710122-1/GA PC$4.00/MF$1.45
Westinghouse Electric Corp., Madison, PA. Advanced Reactors Div.
CORE RESTRAINT SYSTEM DESIGN AND ANALYSIS.
W. E. Pennell. 37p

Descriptors: (*Fbr type reactors, Reactor core restraints), (*Sodium cooled reactors, Reactor core restraints), (*Reactor core restraints, *Design), Performance, Reactor cores, Reactor operation.

For abstract, see NSA 28 06, number 14400.

CONF-721112-11/GA PC$3.50/MF$1.45
Foster Wheeler Corp., New York.
DESIGN AND ANALYSIS EXPERIENCE WITH A LIQUID METAL HEAT EXCHANGER FOR FFTF SERVICE.
A. C. Gangadharan. 1972, 26p

Descriptors: (*Fftf reactor, *Heat exchangers), Design, Finite element method, Primary coolant circuits, Secondary coolant circuits, Stress analysis.

For abstract, see NSA 28 06, number 14466.

CONF-721112-12/GA PC$3.00/MF$1.45
Foster Wheeler Corp., New York.
DESIGN AND ANALYSIS ASPECTS OF THE FFTF INTERMEDIATE HEAT EXCHANGER FOR HIGH TEMPERATURE SODIUM SERVICE.
D. H. Pai. 4p

Descriptors: (*Fftf reactor, *Heat exchangers), Design, Fabrication, Primary coolant circuits, Secondary coolant circuits.

For abstract, see NSA 28 06, number 14467.

CONF-721202-19/GA PC$4.00/MF$1.45
Westinghouse Electric Corp., Madison, PA. Advanced Reactors Div.
FAST BREEDER REACTOR PLANT PROTECTION SYSTEM INSTRUMENTATION.
J. E. Werner. 40p
Contract AT(45-1)-2171

Descriptors: (*Fftf reactor, *Reactor instrumentation), Containment systems, Design, Equipment protection devices, Logic circuits, Performance, Reactor control systems.

For abstract, see NSA 28 06, number 14468.

CONF-730304-/GA PC$13.60/MF$1.45
Aerojet Nuclear CO., Idaho Falls, Idaho.
TOPICAL MEETING ON WATER-REACTOR SAFETY, SALT LAKE CITY, UTAH, MARCH 26--28, 1973.
G. A. Freund. 1973, 781p

Descriptors: (*Water cooled reactors, Reactor safety), (*Reactor safety, *Meetings), Reactor accidents, Reactor operation.

For abstract, see NSA 28 04, number 10128.

CONF-730532-1/GA PC$4.75/MF$1.45
Oak Ridge National Lab., Tenn.
DEVELOPMENT OF HIGH-TEMPERATURE STRUCTURAL DESIGN METHODS FOR LIQUID-METAL FAST-BREEDER REACTOR SYSTEM COMPONENTS.
C. E. Pugh. 51p

Descriptors: (*Fbr type reactors, Reactor components), (*Sodium cooled reactors, Reactor components), (*Reactor components, *Design), (*Stainless steel-304, *Creep), Deformation, Destructive testing, Elasticity, High temperature, Mechanical structures, Plasticity, Stresses, Temperature dependence.

For abstract, see NSA 28 06, number 14403.

COO-2152-7/GA PC$3.00/MF$1.45
Cincinnati Univ., Ohio. Dept. Of Chemical and Nuclear Engineering.
INVESTIGATION OF PRESSURE DROPS AND HEAT TRANSFER COEFFICIENTS FOR LOSS OF COOLANT EVALUATIONS. QUARTERLY PROGRESS REPORT FOR PERIOD ENDING MARCH 31, 1973.
1973, 13p
Contract AT(11-1)-2152

Descriptors: (*Water cooled reactors, *Loss of coolant), Fluid flow, Heat transfer, Pressure dependence, Two-phase flow.

For abstract, see NSA 28 04, number 10160.

COO-385-10/GA PC$3.75/MF$1.45
Michigan Univ., Ann Arbor. Michigan Memorial Phoenix Project.
FORD NUCLEAR REACTOR: EDUCATIONAL AND RESEARCH ACTIVITIES, JULY 1, 1971--JUNE 30, 1972.
Sep 72, 33p
Contract AT(11-1)-385

Descriptors: (*Fnr reactor, *Reactor operation), Education, Isotope production, Research programs.

For abstract, see NSA 28 04, number 10020.

DP-1305/GA PC$5.45/MF$1.45
Du Pont de Nemours (E.I.) and CO., Aiken, S. C. Savannah River Lab.
SOURCE ROD FAILURE AND SUBSEQUENT DECONTAMINATION.
F. B. Longtin. Apr 73, 72p
Contract AT(07-2)-1

Descriptors: (*K reactor, *Reactor accidents), Contamination, Decontamination, Failures, Neutron sources, Radiation hazards, Reactor maintenance.

For abstract, see NSA 28 05, number 12110.

DUN-7294-A/GA PC$3.00/MF$1.45
Douglas United Nuclear, Inc., Richland, Wash.
PRODUCTION TEST AUTHORIZATION NUMBER 239, SUPPLEMENT I. 117-N FILTER BUILDING CHARCOAL SAMPLING PROGRAM.
E. C. Bennett. 22 Dec 72, 11p

Descriptors: (*N-reactor, Air filters), (*Air filters, *Performance testing), Activated carbon, Containment, Corrosion, Efficiency, Hydrocarbons, Impurities, Inspection, Methyl iodide, Time dependence.

For abstract, see NSA 28 04, number 10029.

DUN-7751-B/GA PC$3.00/MF$1.45
Douglas United Nuclear, Inc., Richland, Wash.
REDUCED DEMINERALIZED WATER TEMPERATURE. FINAL REPORT FOR DT-278.
W. D. Bainard, and L. J. Newell. 13 Oct 72, 13p

Descriptors: (*N-reactor, *Demineralizers), Oxygen, Reactor cooling systems, Temperature dependence, Water.

For abstract, see NSA 28 04, number 10030.

DUN-8065/GA PC$4.50/MF$1.45
Douglas United Nuclear, Inc., Richland, Wash.
N-REACTOR FUEL COLUMN SPACER TESTING FOR THE THIRD GENERATION PERFORATED SPACER DESIGN.
D. L. Pursley. 15 Feb 73, 48p

Descriptors: (*N-reactor, *Spacers), Design, Fuel assemblies, Performance testing.

For abstract, see NSA 28 04, number 10031.

EIR-206/GA PC$12.00/MF$1.45
Eidgenoessisches Institut fuer Reaktorforschung, Wuerenlingen (Switzerland).
OPTIMAL COMMAND OF A NUCLEAR POWER PLANT GCFR WITH THE HELP OF QUADRATIC PROGRAMMING.
P. B. Raboud. Nov 72, 198p
In French. U.S. Sales Only.

Descriptors: (*Htgr type reactors, Reactor control systems), (*Fbr type reactors, Reactor control systems), (*Reactor control systems, *Specifications), (*Gcfr type reactors, Reactor control systems), Design, Mathematical models, Optimization, Reactor operation.

For abstract, see NSA 28 06, number 14834.

EURFNR-1086/GA PC$3.75/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Neutronenphysik und Reaktortechnik.
HELIUM TURBINE DESIGN FOR A 1000 MWE GAS-COOLED FAST BREEDER REACTOR WITH CLOSED GAS TURBINE CYCLE.
C. Savatteri. Feb 73, 33p EUR-4853, KFK-1760
U.S. Sales Only.

Descriptors: (*Gas cooled reactors, Gas turbines), (*Fbr type reactors, Gas turbines), (*Gas turbines, *Design), Helium, Stresses, Turbine blades, Velocity.

For abstract, see NSA 28 05, number 12071.

EURFNR-1088/GA PC$3.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Angewandte Systemtechnik und Reaktorphysik.
PRELIMINARY ANALYSIS OF THE PREDISASSEMBLY PHASE OF THE UNPROTECTED OVERPOWER TRANSIENT ACCIDENT FOR SNR 300.
W. E. Kastenberg, and E. T. III Rumble. Mar 73, 27p KFK-1782
U.S. Sales Only.

Descriptors: (*Snr reactor, *Reactor accidents), Design, Fuel-coolant interactions, Fuels, Mathematical models, Motion, Pressure vessels, Reactor core disruption, Reactor kinetics, Reactor shutdown, Transients.

For abstract, see NSA 28 05, number 12072.

FRNC-TH-345/GA PC$8.00/MF$1.45
Paris Univ., Orsay (France). Faculte des Sciences.
STUDY OF A DIFFERENTIAL MODEL DESCRIBING THE DRYOUT PHENOMENON FOR A TWO-PHASE FLOW IN THE CHANNEL OF A NUCLEAR REACTOR.
J. P. Sursock. 116p
In French. U.S. Sales Only.

Descriptors: (*Two-phase flow, *Flow models), (*Reactor channels, *Critical heat flux), (*Dryout, *Mathematical models), Bubbles, Burnout,

Droplets, Reactor cooling systems, Steam, Void fraction, Water.

For abstract, see NSA 28 06, number 14669.

GEAP-13317-1/GA PC$5.45/MF$1.45
General Electric CO., San Jose, Calif. Atomic Power Equipment Dept.
BWR BLOWDOWN HEAT TRANSFER. FIRST QUARTERLY PROGRESS REPORT, JULY 1--SEPTEMBER 30, 1972.
G. W. Burnette. Sep 72, 59p
Contract AT(04-3)-189

Descriptors: (*Bwr type reactors, *Blowdown), Critical heat flux, Fuel element clusters, Heat transfer, Heaters, Simulation, Testing.

For abstract, see NSA 28 04, number 09956.

GEAP-13825-4/GA PC$5.45/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
LMFBR IN-CORE INSTRUMENTATION AND IN-VESSEL SURVEILLANCE SYSTEMS. FOURTH QUARTERLY REPORT, OCTOBER--DECEMBER 1972.
Jan 73, 67p
Contract AT(04-3)-189

Descriptors: (*Sodium cooled reactors, In core instruments), (*Fbr type reactors, In core instruments), (*In core instruments, *Research programs), Electric cables, Flowmeters, Inspection, Monitoring, Neutron detectors, Reactor vessels, Sound waves, Temperature measurement.

For abstract, see NSA 28 04, number 10008.

GEAP-13825-5/GA PC$4.00/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
LMFBR IN-CORE INSTRUMENTATION AND IN-VESSEL SURVEILLANCE SYSTEMS FIFTH QUARTERLY REPORT, JANUARY--MARCH 1973.
Apr 73, 38p
Contract AT(04-3)-189

Descriptors: (*Fbr type reactors, In core instruments), (*Sodium cooled reactors, In core instruments), (*In core instruments, *Research programs), Acoustic testing, Computers, Configuration, Design, Electric cables, Flowmeters, Fluid flow, Inspection, Mixing, Monitoring, Neutron detectors, On-line systems, Performance, Reactor control systems, Sodium.

For abstract, see NSA 28 06, number 14420.

GEAP-13921/GA PC$5.45/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
ANALYSIS OF HYPOTHETICAL CORE DISRUPTIVE ACCIDENT (HCDA), APRIL--DECEMBER 1972.
Dec 72, 116p
Contract AT(04-3)-189

Descriptors: (*Fbr type reactors, *Reactor core disruption), (*Sodium cooled reactors, Reactor core disruption), Computer calculations, Computer codes, Excursions, Fuel-coolant interactions, Loss of flow, Transients.

For abstract, see NSA 28 04, number 10161.

GULF-GA-A-9354/GA PC$6.75/MF$1.45
Gulf General Atomic CO., San Diego, Calif.
EXPERIMENTAL AND ANALYTICAL RESULTS FOR HTGR TYPE CONTROL RODS OF HAFNIUM AND BORON IN THE HTGR CRITICAL FACILITY.
R. J. Nirschl, E. M. Gillette, and J. R. Brown. 31 Jan 73, 92p
Contract AT(04-3)-167

Descriptors: (*Htgr type reactors, *Control rod worths), (*Control elements, Control rod worths), Boron, Comparative evaluations, Design, Hafnium, Zero power reactors.

For abstract, see NSA 28 06, number 14836.

JAERI-M-5064/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
VIBRATION OF REACTOR STRUCTURE, PART II-8. FINALE-1: RESPONSE SPECTRUM AND FOURIER SPECTRUM ANALYSIS CODE.
T. Ikushima. Dec 72, 29p
In Japanese. U.S. Sales Only.

Descriptors: (*Computer codes, *F codes), (*Reactor cores, *Seismic effects), (*Reactor components, Seismic effects), Fourier analysis, Mechanical vibrations.

For abstract, see NSA 28 04, number 10163.

JAERI-M-5083/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
VIBRATION OF REACTOR STRUCTURE, II-9. TOROTO-1, -2: SEISMIC SIMULATION PROGRAM FOR CORE FORMED WITH BLOCKS.
T. Ikushima. Dec 72, 39p
In Japanese. U.S. Sales Only.

Descriptors: (*Computer codes, *T codes), (*Htgr type reactors, *Seismic effects), (*Reactor cores, Seismic effects), Computer calculations, Earthquakes, Fortran, Mechanical vibrations, Simulation.

For abstract, see NSA 28 04, number 09984.

JUL-906-RX/GA PC$3.25/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Zentralinstitut fuer Reaktorexperimente.
CONTRIBUTION OF THERMAL RADIATION TO THERMAL CONDUCTION OF PEBBLE BEDS IN STAGNANT MEDIA.
H. J. Leyers. Dec 72, 24p
In German. U.S. Sales Only.

Descriptors: (*Pebble bed reactors, Reactor cores), (*Reactor cores, *Heat transfer), Mathematical models, Spheres, Thermal conduction, Thermal radiation.

For abstract, see NSA 28 06, number 14672.

MRR-100/GA PC$4.25/MF$1.45
Technische Universitaet Muenchen, Garching (West Germany). Laboratorium fuer Reaktorregelung und Anlagensicherung.
INVESTIGATION OF THE EFFECTS OF VARIOUS PARAMETERS ON MELTDOWN OF A REACTOR CORE BY USE OF A MODIFIED VERSION OF THE CHEMLOC-II PROGRAM.
J. Simon-Weidner. Sep 72, 45p
In German. U.S. Sales Only.

Descriptors: (*Reactor accidents, *Meltdown), C codes, Mathematical models, Reactor cores, Reactor safety.

For abstract, see NSA 28 04, number 10164.

NP-19746/GA PC$12.00/MF$1.45
Department of Atomic Energy, Bombay (India).
ANNUAL REPORT OF THE DEPARTMENT OF ATOMIC ENERGY, GOVERNMENT OF INDIA, 1972--73.
1973, 200p
U.S. Sales Only.

Descriptors: (*Nuclear power, *India), Economics, Iaea, Industry, Management, Metallurgy, Nuclear fuels, Nuclear power plants, Planning, Reactors.

For abstract, see NSA 28 04, number 10491.

NP-19763/GA PC$6.00/MF$1.45
Technischer Ueberwachungs-Verein E. V., Cologne (West Germany). Institut fuer Reaktorsicherheit.
REACTOR SAFETY RESEARCH PROGRAM.
Nov 72, 77p
U.S. Sales Only.

Descriptors: (*Bwr type reactors, Reactor safety), (*Pwr type reactors, Reactor safety), (*Reactor safety, *Research programs), German federal republic.

For abstract, see NSA 28 04, number 10165.

N73-29717/8GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
FEASIBILITY OF AN ON-LINE FISSION-GAS-LEAK DETECTION SYSTEM.
P. H. Lustig. Aug 73, 16p NASA-TM-X-2870, E-7007

Descriptors: *Feasibility analysis, *Fission products, *Gas detectors, *Nuclear reactor control, *Nuclear reactors, Hydrides, Reactor safety, Zirconium.

For abstract, see STAR 1120

ORNL-TM-3039/GA PC$23.25/MF$1.45
Oak Ridge National Lab., Tenn.
MSRE SYSTEMS AND COMPONENTS PERFORMANCE.
R. H. Guymon. Jun 73, 422p
Contract W-7405-eng-26

Descriptors: (*Msre reactor, *Performance), Air, Blowers, Containment, Filters, Leaks, Lubricating oils, Pumps, Reactor components, Reactor cooling systems, Reactor operation, Reactor shutdown, Thermal insulation.

For abstract, see NSA 28 05, number 12058.

ORNL-TM-4147/GA PC$7.00/MF$1.45
Oak Ridge National Lab., Tenn.
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR JANUARY--FEBRUARY 1973. NON-LMFBR PROGRAMS.
W. B. Cottrell. Jun 73, 97p
Contract W-7405-eng-26

Descriptors: (*Reactor safety, *Research programs), (*Htgr type reactors, Reactor safety), (*Steels, *Materials testing), Chemical reactions, Coated fuel particles, Fission products, Graphite, Steam, Mechanical properties, Pressure vessels, Information systems, Operation, Reactor components, Standards, Design, Nozzles, Pipes, Pumps, Stress analysis, Valves.

For abstract, see NSA 28 06, number 14599.

ORNL-TM-4183/GA PC$6.25/MF$1.45
Oak Ridge National Lab., Tenn.
POSTIRRADIATION EXAMINATION AND TESTING OF THE ORR N/SUB F/ TRAY.
K. Farrell, E. L. Jr. Long, R. T. King, and A. Jostsons. Jun 73, 84p
Contract W-7405-eng-26

Descriptors: (*Orr reactor, *Reactor components), Aluminium, Bending, Inspection, Physical radiation effects, Reactor cores, Swelling, Testing.

For abstract, see NSA 28 05, number 12078.

ORNL-TM-4245/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.

HIGH FLUX ISOTOPE REACTOR QUARTERLY REPORT JANUARY--MARCH 1973.
R. V. McCord, and B. L. Corbett. May 73, 22p
Contract W-7405-eng-26

Descriptors: (*Hfir reactor, *Reactor maintenance), Fuel cycle, Reactor operation.

For abstract, see NSA 28 04, number 10033.

PATENT-3 733 760/GA Not available NTIS
Atomic Energy Commission, Washington, D.C.
REACTOR VESSEL.
Patent,
Richard J. Koerner. Filed 5 Mar 70, patented 22 May 73, 9p PAT-APPL-16 645
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Nuclear reactor containment, Pressure vessels), (*Pressure vessels, *Patents), Prestressed concrete, Reactor cores, Nuclear reactor safety.
Identifiers: PAT-CL-52-224.

A concrete pressure containment vessel for a nuclear reactor is described in the patent wherein an access opening therein is sealed by a closure member. A plurality of tendons extend generally parallel with the axis of the access opening and are distributed about the access opening and pass entirely through the main portion of the pressure vessel and also through the closure member. The tendons are placed under tension to secure and seal the closure member in place and to prestress the remainder of the pressure vessel.

RD/B/M-2506/GA PC$3.25/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
GAS-COOLED REACTOR HEAT TRANSFER: UNCLASSIFIED B.N.L. WORK 1966--1972.
H. G. Lyall. Nov 72, 21p
U.S. Sales Only.

Descriptors: (*Agr type reactors, *Heat transfer), (*Gcfr type reactors, Heat transfer), Bibliographies.

For abstract, see NSA 28 06, number 14378.

RD/B/N-2461/GA PC$3.00/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
USE OF A SIMPLE MODEL TO PREDICT REGIONAL SOUND PRESSURE LEVELS IN COMPLEX GAS CIRCUIT GEOMETRIES.
W. J. Hammill. Nov 72, 20p
U.S. Sales Only.

Descriptors: (*Reactor cooling systems, *Sound waves), (*Gas cooled reactors, Reactor cooling systems), Carbon dioxide, Ducts, Gas flow, Gases, Mathematical models, Noise, Reactor channels, Transmission.

For abstract, see NSA 28 05, number 12059.

RD/B/N-2567/GA PC$4.00/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
EQUILIBRIUM PARTIAL PRESSURES OF IMPURITY GASES IN THE HELIUM COOLANT OF A HIGH TEMPERATURE GAS-COOLED REACTOR.
A. C. Hill, and R. Hales. Feb 73, 37p
U.S. Sales Only.

Descriptors: (*Htgr type reactors, Primary coolant circuits), (*Helium, *Impurities), (*Primary coolant circuits, Impurities), Chemical reactions, Computer codes, Coolants, Equilibrium, Gases, Graphite, Leaks, Reactor cores, Water.

For abstract, see NSA 28 05, number 12060.

RT/ING-(72)20/GA PC$4.75/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy).
SIGNIFICANT ASPECTS CONCERNING RC-1 TRIGA REACTOR OPERATIONS.
L. Di Palo. 28 Oct 72, 52p CONF-720993-1
U.S. Sales Only.

Descriptors: (*Triga-2-rome reactor, *Performance testing), Burnup, Configuration, Data, Fuel elements, Neutron flux, Reactivity, Reactivity worths, Reactor cores, Reactor kinetics, Reactor operation, Uses.

For abstract, see NSA 28 06, number 14481.

RT/ING-(72)5/GA PC$3.00/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy).
ANOMALY OF THE TRIGA RC-1 REACTOR DURING THE EXECUTION OF NUCLEAR TESTS AT 1 MW.
L. Di Palo. 11 Nov 72, 13p CONF-700867-1
U.S. Sales Only.

Descriptors: (*Triga-2-rome reactor, *Reactor accidents), Failures, Fission products, Fuel elements, Gases.

For abstract, see NSA 28 05, number 12080.

TID-26321/GA PC$3.00/MF$1.45
Washington State Univ., Pullman. Nuclear Radiation Center.
REACTOR SHARING PROGRAM. FINAL REPORT, DECEMBER 1, 1971--NOVEMBER 30, 1972.
W. E. Wilson. 8 Mar 73, 11p
Contract AT(45-1)-2221

Descriptors: (*Wsur reactor, *Reactor operation), Research programs.

For abstract, see NSA 28 04, number 10025.

WAPD-MRP-139/GA PC$4.00/MF$1.45
Bettis Atomic Power Lab., Pittsburgh, PA.
PRESSURIZED WATER REACTOR PROJECT. TECHNICAL PROGRESS REPORT, JULY 26, 1972--JANUARY 25, 1973.
1973, 13p
Contract AT-11-1-GEN-14

Descriptors: (*Shippingport reactor, *Reactor cores), Breeder reactors, Liquid wastes, Radioactive wastes, Reactor operation, Specifications, Water cooled reactors.

For abstract, see NSA 28 06, number 14338.

18J. Reactor Materials

AAEC/E-245/GA PC$3.75/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
PILOT PLANT DEVELOPMENT OF PROCESSES FOR THE PRODUCTION OF NUCLEAR GRADE URANIUM DIOXIDE.
P. G. Alfredson. Nov 72, 33p
U.S. Sales Only.

Descriptors: (*Uranium dioxide, *Production), Adu, Calcination, Fabrication, Fluidized bed, Nitric acid, Pilot plants, Precipitation, Reduction, Solvent extraction.

For abstract, see NSA 28 05, number 11124.

AD-768 290/9GA PC$3.00/MF$1.45
Naval Research Lab Washington D C
IRRADIATION EFFECTS ON REACTOR STRUCTURAL MATERIALS.
Quarterly progress rept. 1 May-31 Jul 73,
L. E. Steele. 15 Aug 73, 50p Rept no. NRL-MR-2639
Contract AT(49-5)-2110

See also report dated 15 May 73, AD-763 658.

Descriptors: (*Reactor materials, *Radiation damage), (*Steel, Radiation damage), Stainless steel, Ion bombardment, Neutron reactions, Fracture(Mechanics), Annealing, Iron alloys, Fatigue(Mechanics), Control rods, Electron microscopy.
Identifiers: SM-1 reactor, Steel 304, Steel 316, Steel A-543, Steel A-508, Fatigue life.

The report, covering research for the period 1 May - 31 July 1973, includes: (1) fatigue properties of irradiated EBR-2 control rod thimble (304 stainless steel); (2) fracture toughness characterization of irradiated stainless steels; (3) notch ductility of higher strength steels. Types A543 plate and A508 forging; (4) damage produced in iron and iron alloys by neutron irradiation and ion bombardment; (5) mircrostructure of helium-implanted annealed and cold worked 316 stainless steel, and (6) determination of neutron flux level in the SM-1 reactor. (Modified author abstract)

AEEW-R-574/GA PC$6.00/MF$1.45
Atomic Energy Establishment, Winfrith (England).
DEVELOPMENT OF INSTRUMENTS FOR THE DETECTION OF DRYOUT IN UNIFORM AND NONUNIFORM AXIALLY HEATED ROD CLUSTERS.
D. J. Adams, K. J. Salt, and C. A. Wintle. Jan 72, 80p
U.S. Sales Only.

Descriptors: (*Fuel element clusters, *Dryout), (*Water cooled reactors, Fuel element clusters), (*Measuring instruments, *Performance), Heat transfer, Heating, Mockup, Simulation, Specifications, Temperature measurement.

For abstract, see NSA 28 05, number 10958.

AEEW-R-832/GA PC$3.00/MF$1.45
Atomic Energy Establishment, Winfrith (England).
METHODS FOR THREE-DIMENSIONAL FUEL MANAGEMENT STUDIES ON HIGH TEMPERATURE REACTORS.
J. R. Askew, D. W. Anderson, and K. G. Pearson. Oct 72, 18p
U.S. Sales Only.

Descriptors: (*Htgr type reactors, *Fuel cycle), Agr type reactors, Algorithms, Control elements, Iterative methods, Multigroup theory, Neutron diffusion equation, Neutron spectra, Nuclear materials management, Reactor cores, Spatial distribution, Three-dimensional calculations.

For abstract, see NSA 28 05, number 12055.

AERE-R-7407/GA PC$6.25/MF$1.45
Atomic Energy Research Establishment, Harwell (England).
HETEROGENEOUS DECOMPOSITION OF ACETONE BY A 20% CR--25% NI--NB STABILISED AUSTENITIC STAINLESS STEEL AND OTHER MATERIALS. PART 1. KINETICS AND DEPOSIT CHARACTERISATION.
M. J. Bennett, G. H. Chaffey, A. J. Langford, and D. R. V. Silvester. Apr 73, 85p
U.S. Sales Only.

Descriptors: (*Wagr reactor, Fuel cans), (*Fuel cans, *Corrosion products), (*Stainless steel-20-25, Corrosion products), Acetone, Carbon, Carbon compounds, Catalysis, Catalysts, Chemical reaction kinetics, Decomposition, Deposition, High temperature, Organic compounds, Reactor materials, Carbon dioxide, Chemical reactions, Niobium additions, Yttrium additions, Aluminium additions, Hastelloy x, Nickel, Silicon carbides, Stainless steels, Heat resisting alloys, Manganese oxides, Metals, Nickel oxides, Oxides, Spinels, Aluminium oxides, Aluminium silicates, Chromium oxides, Iron oxides.

For abstract, see NSA 28 05, number 11336.

AERE-R-7408/GA PC$3.00/MF$1.45
Atomic Energy Research Establishment, Harwell (England).
HETEROGENEOUS DECOMPOSITION OF ACETONE BY A 20% CR--25% NI--NB STABILISED AUSTENITIC STAINLESS STEEL AND OTHER MATERIALS. PART 2. INHIBITION BY SULPHUR POISONING.
M. J. Bennett, G. H. Chaffey, B. L. Myatt, and D. R. V. Silvester. Mar 73, 18p
U.S. Sales Only.

Descriptors: (*Wagr reactor, Fuel cans), (*Fuel cans, *Corrosion products), (*Stainless steel-20-25, Corrosion products), Acetone, Carbon, Carbon compounds, Catalysis, Chemical reactions, Corrosion protection, Decomposition, Deposition, Catalysts, Chromium oxides, Iron oxides, Niobium additions, Additives, Carbonyls, Hydrogen sulfides, Sulfides, Sulfur oxides, Thiophene.

For abstract, see NSA 28 05, number 11337.

AI-AEC-13065/GA PC$5.45/MF$1.45
Atomics International, Canoga Park, Calif.
GEOM: A THERMAL-HYDRAULIC STRESS CODE.
E. Moody. 10 May 73, 85p
Contract AT(04-3)-701

Descriptors: (*Computer codes, *G codes), (*Liquid metal cooled reactors, *Reactor cores), (*Snap reactors, Reactor cores), Heat transfer, Hydraulics, Stress analysis, Thermal analysis, Zirconium hydrides.

For abstract, see NSA 28 04, number 10034.

ANL-Trans-942/GA PC$3.00/MF$1.45
CREEP BEHAVIOR OF OXIDE FUELS UNDER NEUTRON IRRADIATION.
D. Brucklacher, W. Dienst, and F. Thummler. 9p
Translated by J.L. Routbort (Argonne National Lab., Ill.) from Paper No. 251 of Reactor Meeting, Deutsches Atomforum, Karlsruhe, Germany, April 10--13, 1973.

Descriptors: (*Plutonium oxides, *Physical radiation effects), (*Uranium dioxide, Physical radiation effects), Burnup, Creep, Distribution, High temperature, Neutron beams, Sintered materials, Temperature dependence, Very high temperature.

For abstract, see NSA 28 05, number 11126.

ANL-7985/GA PC$5.45/MF$1.45
Argonne National Lab., Ill.
LARGE-DEFORMATION PLASTIC RESPONSE OF HEXAGONS TO PRESSURE PULSES.
C. K. Youngdahl. Mar 73, 57p
Contract W-31-109-eng-38

Descriptors: (*Fuel assemblies, *Ducts), Deformation, Fission products, Fuel-coolant interactions, Gases, Hexagonal configuration, Mathematical models, Plasticity, Pressure dependence, Pulses.

For abstract, see NSA 28 05, number 12155.

ARH-SA-156/GA PC$3.00/MF$1.45
Atlantic Richfield Hanford CO., Richland, Wash.
CRITICALITY PREVENTION BY CONTINUOUS NON-DESTRUCTIVE INSTRUMENTATION ASSAY IN THE PLUTONIUM RECLAMATION FACILITY.
L. E. Bruns. 1973, 5p CONF-730611-10
Contract AT(45-1)-2130

Descriptors: (*Plutonium, *Criticality), Neutron detectors, Radiation monitors, Safety.

For abstract, see NSA 28 06, number 13405.

BARC-643/GA PC$4.00/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
PILOT PLANT FOR THE SEPARATION OF U-233 AT TROMBAY.
N. Srinivasan, M. N. Nadkarni, G. R. Balasubramanian, R. T. Chitnis, and H. R. Siddiqui. 1972, 40p
U.S. Sales Only.

Descriptors: (*Uranium 233, *Purification), (*Thorium, *Separation processes), (*Spent fuels, *Reprocessing), Design, Operation, Pilot plants, Thorium oxides.

For abstract, see NSA 28 05, number 10763.

BARC-656/GA PC$3.00/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
IN-LINE ANALYTICAL METHODS FOR FUEL REPROCESSING STREAMS. PART II. DESIGN AND WORKING OF A SIMPLE GAMMA ABSORPTIOMETER FOR URANIUM.
V. K. Rao, V. K. Bhargava, S. G. Marathe, R. H. Iyer, and M. V. Ramaniah. 1973, 19p
U.S. Sales Only.

Descriptors: (*Spent fuels, *Reprocessing), (*Uranium, *Radiation absorption analysis), Americium, Gamma radiation, On-line measurement systems, Sodium iodides, Solid scintillation detectors, Solids.

For abstract, see NSA 28 05, number 10764.

BARC-657/GA PC$3.00/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
REMOVAL OF ENTRAINED TRIBUTYL PHOSPHATE IN AQUEOUS STREAMS USING A SPRAY COLUMN.
S. V. Kumar. 1973, 7p
U.S. Sales Only.

Descriptors: (*Tbp, *Separation processes), Aqueous solutions, Entrainment, Extraction apparatuses, Solvent extraction, Velocity.

For abstract, see NSA 28 05, number 10765.

BARC-662/GA PC$3.50/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
IN-LINE ANALYTICAL METHODS FOR FUEL REPROCESSING STREAMS. PART III. GAMMA MONITORING OF FISSION PRODUCTS.
S. G. Marathe, V. K. Bhargava, V. K. Rao, R. H. Iyer, and M. V. Ramaniah. 1973, 26p
U.S. Sales Only.

Descriptors: (*Spent fuels, *Reprocessing), (*Fission products, *Gamma spectroscopy), (*Gamma spectrometers, *Performance), On-line measurement systems, Quantitative chemical analysis, Sodium iodides, Solid scintillation detectors.

For abstract, see NSA 28 05, number 10766.

BLG-473/GA PC$3.75/MF$1.45
Centre d'Etude de l'Energie Nucleaire, MOL (Belgium).
CALCULATION OF THE CRITICAL HEAT FLUX IN THE FUEL CAN OF THE MATERIAL TEST REACTOR BR2. VOLUME II. (FIGURES).
A. B. de West-Meerbeeck. 1972, 34p
In French. U.S. Sales Only.

Descriptors: (*Br-2 reactor, *Critical heat flux), Diagrams, Fuel cans.

For abstract, see NSA 28 06, number 14522.

BMFT-FBK-73-5/GA PC$4.75/MF$1.45
Internationale Atomreaktorbau G.M.B.H., Bensberg (West Germany).
COMPACT SODIUM COOLED REACTOR PLANT KARLSRUHE. PROJECT LINKED RESEARCH AND DEVELOPMENT PROGRAMME. PART I. REPORT ON THE WORKS FROM 1.1.1969 TIL 31.8.1969. PART II. FINAL REPORT ON THE RESEARCH PERFORMED DURING THE PERIOD OF THE PROJECT.
Apr 73, 54p
In German. U.S. Sales Only.

Descriptors: (*Knk reactor, *Fuel elements), Austenite, Control rod drives, Corrosion, Ferrite, Heat transfer, Inconel 600, Liquid flow, Lubricants, Materials testing, Mechanical structures, Mockup, Performance, Reactor components, Reactor control systems, Reactor operation, Reactor safety experiments, Research programs, Sodium, Temperature distribution, Temperature measurement, Welded joints, Zirconium hydrides.

For abstract, see NSA 28 06, number 14398.

BNL-17908/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
APPLICATION OF THE CONCEPTUAL DESIGN FACILITY REQUIREMENTS FOR SAFEGUARDS TO FIVE AEC LICENSE EXEMPT CONTRACTORS.
W. Marcuse, T. S. Sherr, and N. Ovuka. 1 Jun 73, 11p CONF-730630-2

Descriptors: (*Fissile materials, *Safeguards), Economics, Nuclear materials management.

For abstract, see NSA 28 05, number 11359.

CONF-710122-2/GA PC$5.50/MF$1.45
Westinghouse Electric Corp., Madison, PA. Advanced Reactors Div.
COMMENTS ON SOME LMFBR CORE DESIGN AND ANALYSIS PROBLEMS.
W. E. Pennell. 67p

Descriptors: (*Fbr type reactors, Reactor cores), (*Sodium cooled reactors, Reactor cores), (*Reactor cores, *Design), (*Fftf reactor, Reactor cores), Creep, Environment, Fuel cans, Fuel pins, Hydraulics, Reliability, Stainless steels, Supports, Swelling.

For abstract, see NSA 28 06, number 14401.

CONF-710606-20/GA PC$3.00/MF$1.45
Westinghouse Electric Corp., Madison, PA. Advanced Reactors Div.
FFTF BARRIERS TO FUEL FAILURE PROPAGATION.
P. L. Wattelet, and R. D. Coffield. 1970, 3p

Descriptors: (*Fftf reactor, *Reactor safety), Failures, Fuel element clusters, Fuel pins, Reactor cores, Safety engineering, Stainless steel-316.

For abstract, see NSA 28 06, number 14579.

CONF-711009-16/GA PC$3.50/MF$1.45
Westinghouse Electric Corp., Madison, PA. Advanced Reactors Div.
PRESSURE DROP PREDICTION FOR FUEL ASSEMBLIES WITH A WIRE WRAP SPACER SYSTEM.
E. H. Novendstern. 28p
Contract AT(45-1)-2171

Descriptors: (*Fuel assemblies, *Pressure gradients), (*Sodium cooled reactors, Fuel assemblies), (*Fbr type reactors, Fuel assemblies), Configuration, Data, Fftf reactor, Fuel pins, Liquid flow, Mathematical models, Spacers, Temperature dependence, Turbulent flow.

For abstract, see NSA 28 06, number 14402.

CONF-730601-2/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.

REMOTE COATING OF HTGR FUEL PARTICLES.
W. J. Lackey, W. H. Pechin, and J. D. Sease. 1973, 12p

Descriptors: (*Thorium oxides, *Surface coating), (*Uranium dioxide, Surface coating), (*Silicon carbides, *Deposition), (*Coated fuel particles, *Fabrication), Coatings, Fluidized bed, Htgr type reactors, Production, Reprocessing, Uranium 233.

For abstract, see NSA 28 04, number 08544.

CONF-730628-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
FUEL FAILURE MOCKUP: SODIUM FACILITY FOR TESTING SIMULATED NUCLEAR FUEL ASSEMBLIES.
P. A. Gnadt, H. E. Penland, and G. E. Mills. 1973, 14p
Contract W-7405-eng-26

Descriptors: (*Fbr type reactors, Fuel elements), (*Sodium cooled reactors, Fuel elements), (*Fuel elements, *Failures), Design, Measuring instruments, Mockup, Operation, Performance, Reactor safety, Reactor safety experiments, Sodium.

For abstract, see NSA 28 06, number 14580.

CONF-730801-1/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
MATERIALS PROBLEMS FROM THE REACTOR OPERATOR'S POINT OF VIEW.
J. A. Cox, and F. T. Binford. 4 May 73, 36p

Descriptors: (*Reactor materials, *Physical radiation effects), Corrosion, Inspection, Neutrons, Reactor maintenance, Reactor operation, Reliability, Reviews.

For abstract, see NSA 28 05, number 12156.

CONF-730801-3/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
REVIEW OF SAFETY-RELATED OCCURRENCES FROM A MATERIALS PERFORMANCE POINT OF VIEW.
R. L. Jr. Scott. 1973, 13p

Descriptors: (*Reactor materials, *Failures), (*Pwr type reactors, Reactor materials), (*Bwr type reactors, Reactor materials), Reactor components, Reactor safety, Reviews.

For abstract, see NSA 28 05, number 12128.

COS-20/GA PC$4.00/MF$1.45
Atomic Weapons Research Establishment, Aldermaston (England). International Atomic Energy Agency, Vienna (Austria).
PROGRESS IN THE DEVELOPMENT OF A SYSTEM FOR THE SAFEGUARDS INSPECTION OF THE FUEL STORE OF A ZERO-ENERGY FAST REACTOR.
F. Brown, P. T. Good, J. B. Parker, A. E. Ross, and D. R. Terrey. Oct 70, 40p
U.S. Sales Only.

Descriptors: (*Zero power reactors, *Nuclear materials management), (*Fuel plates, *Safeguards), Quantitative chemical analysis, Storage.

For abstract, see NSA 28 04, number 08828.

DOCKET-50201-142/GA PC$3.00/MF$1.45
Nuclear Fuel Services, Inc., Rockville, MD.
WEST VALLEY REPROCESSING PLANT. TECHNICAL SPECIFICATIONS, CHANGE REQUEST.
17 May 73, 4p

Descriptors: (*West valley processing plant, *Specifications), Licensing, Operation, Radiation monitoring, Safety.

For abstract, see NSA 28 05, number 10768.

DOCKET-50332-29/GA PC$3.00/MF$1.45
Allied-Gulf Nuclear Services, Barnwell, S.C.
BARNWELL NUCLEAR FUEL PLANT. REQUEST FOR EXTENSION OF CONSTRUCTION PERMIT.
31 May 73, 3p

Descriptors: (*Barnwell fuel processing plant, *Licensing), (*Fuel reprocessing plants, Licensing).

For abstract, see NSA 28 05, number 10769.

DOCKET-50332-30/GA PC$6.50/MF$1.45
Allied-Gulf Nuclear Services, Barnwell, S.C.
BARNWELL NUCLEAR FUEL PLANT. SUPPLEMENTAL GENERAL INFORMATION.
8 Jun 73, 89p

Descriptors: (*Fuel reprocessing plants, *Personnel), (*Barnwell fuel processing plant, Personnel), Licensing, Organizing.

For abstract, see NSA 28 05, number 10770.

DOCKET-701257-4/GA PC$6.25/MF$1.45
Directorate of Licensing (Aec), Washington, D.C.
URANIUM OXIDE FUEL PLANT. DRAFT ENVIRONMENTAL STATEMENT.
May 73, 82p

Descriptors: (*Fuel fabrication plants, *Environment), Licensing, Liquid wastes, Radioactive waste processing, Uranium oxides, Waste storage.

For abstract, see NSA 28 04, number 08195.

DOCKET-701372-1/GA PC$18.25/MF$1.45
Nus Corp., Rockville, MD. (Usa). Environmental Safeguards Div.
GULF YOUNGSVILLE NUCLEAR FACILITY. ENVIRONMENTAL IMPACT REPORT.
Feb 73, 322p GULF-EES-A-12380

Descriptors: (*Fuel fabrication plants, *Environment), Htgr type reactors, Licensing, Site selection.

For abstract, see NSA 28 05, number 10894.

DP-Report-657/GA PC$3.75/MF$1.45
Atomic Energy Establishment, Winfrith (England).
DIMENSIONAL AND PHYSICAL PROPERTY CHANGES OF HIGH TEMPERATURE REACTOR GRAPHITES IRRADIATED AT TEMPERATURES IN THE RANGE 600 TO 1200 EXP 0 C. DRAGON PROJECT.
M. R. Everett, R. Blackstone, L. W. Graham, and R. Manzel. Aug 69, 35p CONF-690627-4
U.S. Sales Only.

Descriptors: (*Uranium dioxide, *Physical radiation effects), (*Uranium carbides, Physical radiation effects), (*Coated fuel particles, Physical radiation effects), Compacts, Dragon reactor, Fuel elements, Graphite, Neutron beams.

For abstract, see NSA 28 04, number 08781.

DP-Report-666/GA PC$3.50/MF$1.45
Atomic Energy Establishment, Winfrith (England).
PERFORMANCE OF THERMAL INSULATION IMMERSED IN HELIUM. DRAGON PROJECT.
A. N. Kinkead, and B. E. Pitchford. Oct 69, 29p CONF-691112-6
U.S. Sales Only.

Descriptors: (*Thermal insulation, *Performance), (*Helium cooled reactors, Thermal insulation), Computer codes, Coolants, Fibers, Heat transfer, Helium, Metals, Minerals, Spacers, Thermal conductivity.

For abstract, see NSA 28 04, number 08545.

DP-Report-677/GA PC$6.50/MF$1.45
Atomic Energy Establishment, Winfrith (England).
DEPOSITION AND STRUCTURE OF PYROLYTIC SILICON CARBIDE. DRAGON PROJECT.
E. H. Voice, and D. N. Lamb. Oct 69, 86p CONF-691140-5
U.S. Sales Only.

Descriptors: (*Uranium dioxide, Coated fuel particles), (*Coated fuel particles, Silicon carbides), (*Silicon carbides, *Deposition), Containment, Fission products, Fluidized bed, Microstructure, Organic chlorine compounds, Pyrolysis, Silanes, Spheres.

For abstract, see NSA 28 04, number 08546.

DP-Report-683/GA PC$3.50/MF$1.45
Atomic Energy Establishment, Winfrith (England).
MODEL FOR STRESS ANALYSIS IN COATED FUEL PARTICLES. DRAGON PROJECT.
H. Walther. Oct 69, 28p CONF-691140-6
U.S. Sales Only.

Descriptors: (*Uranium dioxide, Coated fuel particles), (*Coated fuel particles, *Stress analysis), Dragon reactor, Mathematical models, Pyrolytic carbon.

For abstract, see NSA 28 04, number 08547.

EIR-236/GA PC$3.75/MF$1.45
Eidgenoessisches Institut fuer Reaktorforschung, Wuerenlingen (Switzerland).
SOL-GEL PROCESSES FOR CARBIDE PREPARATION. STATUS REPORT FROM SWITZERLAND.
K. Bischoff, M. H. Lloyd, and H. Schumacher. May 73, 35p CONF-730524-2
U.S. Sales Only.

Descriptors: (*Plutonium carbides, *Chemical preparation), (*Uranium carbides, Chemical preparation), (*Fuel pins, *Fabrication), (*Nuclear fuels, *Spheres), Compacting, Crystallization, Fuel elements, Physical radiation effects, Research programs, Reviews, Sol-gel process.

For abstract, see NSA 28 04, number 08548.

EUR-4945/GA PC$4.50/MF$1.45
European Atomic Energy Community, Ispra (Italy). Joint Nuclear Research Center.
INVESTIGATION OF THE PARALLEL-FLOW INDUCED VIBRATION IN A THREE-ROD FUEL BUNDLE.
E. Ohlmer, and R. Schwemmle. May 73, 50p
In German. U.S. Sales Only.

Descriptors: (*Fuel element clusters, *Mechanical vibrations), (*Fuel channels, *Fluid flow), Fuel rods, Pressure dependence, Turbulence.

For abstract, see NSA 28 05, number 12152.

EUR-4950/GA PC$8.75/MF$1.45
European Atomic Energy Community, Ispra (Italy). Joint Nuclear Research Center.
VELASCOE: VELOCITY FIELD IN ASYMMETRIC ROD CONFIGURATIONS.
W. Eifler, and R. Nijsing. May 73, 134p
U.S. Sales Only.

Descriptors: (*Computer codes, *V codes), (*Fuel element clusters, *Flow models), Configuration,

Distribution, Programming, Turbulent flow, Velocity.

For abstract, see NSA 28 04, number 10177.

EURFNR-1054/GA PC$12.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany).
FAST BREEDER PROJECT. THIRD QUARTERLY REPORT, 1972.
Nov 72, 207p KFK-1272/3, EUR-4849

Descriptors: (*Fbr type reactors, *Research programs), (*Sodium cooled reactors, Research programs), (*Fuel pins, *Design), (*Fuel cans, *Irradiation), Corrosion, Cross sections, Environment, Heat transfer, Hydrodynamics, Impurities, In core instruments, Neutrons, Plutonium oxides, Reactor accidents, Reactor instrumentation, Reactor kinetics, Reactor materials, Reactor safety, Sodium, Uranium dioxide.

For abstract, see NSA 28 06, number 14415.

EURFNR-1059/GA PC$5.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Reaktorbauelemente.
WEAR BEHAVIOR OF MATERIAL COMBINATIONS IN LIQUID SODIUM: EXPERIMENTAL LAYOUT AND EXPERIMENTAL RESULTS.
E. Wild, K. J. Mack, and G. Drechsler. Nov 72, 67p KFK-1659

Descriptors: (*Sodium cooled reactors, Reactor materials), (*Reactor materials, *Wear), Bearings, Materials testing, Mechanical tests, Reactor components, Sodium.

For abstract, see NSA 28 04, number 10003.

EURFNR-1071/GA PC$7.60/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany).
FAST BREEDER PROJECT. FOURTH QUARTERLY REPORT, 1972.
R. Hueper. Feb 73, 222p KFK-1272/4

Descriptors: (*Fbr type reactors, *Research programs), (*Sodium cooled reactors, Research programs), (*Fuel pins, *Design), (*Fuel cans, *Irradiation), Corrosion, Cross sections, Environment, Heat transfer, Hydrodynamics, Impurities, In core instruments, Neutrons, Plutonium oxides, Reactor accidents, Reactor instrumentation, Reactor kinetics, Reactor materials, Reactor safety, Sodium, Uranium dioxide.

For abstract, see NSA 28 06, number 14416.

EURFNR-1084/GA PC$4.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany).
INVESTIGATIONS INTO THE LONG-TERM BEHAVIOR OF SUPPORT POINTS ON A MODEL FUEL ELEMENT FROM CLADS WITH SIX INTEGRAL HELICAL SPACER FINS IN AN ISOTHERMAL SODIUM FLOW.
E. Baumgaertner, H. U. Borgstedt, and G. Drechsler. Feb 73, 50p KFK-1723

Descriptors: (*Sodium cooled reactors, Fuel element clusters), (*Fuel element clusters, *Performance testing), (*Fbr type reactors, Fuel element clusters), (*Fuel rods, *Fins), Isothermal processes, Liquid flow, Shrouds, Sodium, Spacers.

For abstract, see NSA 28 05, number 12070.

EURFNR-1089/GA PC$3.75/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Neutronenphysik und Reaktortechnik.

NISA I: A PROGRAM FOR CALCULATING COEFFICIENTS OF FRICTION IN ROUGH ROD BUNDLES IN HEXAGONAL ARRAY.
C. Savatteri. Mar 73, 32p EUR-4848

Descriptors: (*Gcfr type reactors, Fuel element clusters), (*Fuel element clusters, *Gas flow), (*Computer codes, *N codes), Friction, Hexagonal configuration, Roughness.

For abstract, see NSA 28 06, number 14417.

EURFNR-1091/GA PC$3.25/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Material und Festkoerperforschung.
AFTERSINTERING BEHAVIOR OF UO SUB 2 /PUO SUB 2 FUEL PELLETS.
T. Dippel, and E. Guenther. Mar 73, 22p KFK-1781

Descriptors: (*Uranium dioxide, *Sintering), (*Plutonium oxides, Sintering), (*Fuel pellets, Sintering), (*Fbr type reactors, Fuel pellets), Binary mixtures, Calcination, Density, Fabrication, Powders.

For abstract, see NSA 28 05, number 11128.

GEAP-10028-45/GA PC$12.50/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
SODIUM-COOLED REACTORS CORE ENGINEERING PROGRAM. FORTY-FIFTH QUARTERLY REPORT, NOVEMBER 1972--JANUARY 1973.
Mar 73, 210p
Contract AT(04-3)-893

Descriptors: (*Fbr type reactors, Reactor cores), (*Sodium cooled reactors, Reactor cores), (*Reactor cores, *Research programs), (*Fftf reactor, Reactor cores), Boron carbides, Breeding blankets, Control elements, Design, Failures, Fuel assemblies, Fuel rods, Physical radiation effects, Plutonium oxides, Reactor core restraints, Stainless steels, Testing, Uranium dioxide.

For abstract, see NSA 28 06, number 14418.

GEAP-10151/GA PC$3.00/MF$1.45
General Electric CO., San Jose, Calif. Atomic Power Equipment Dept.
TWO-PHASE FLOW AND HEAT TRANSFER IN MULTIROD GEOMETRIES. SEVENTEENTH QUARTERLY PROGRESS REPORT, OCTOBER 1--DECEMBER 31, 1969.
Jan 70, 40p
Contract AT(03-4)-189

Descriptors: (*Water cooled reactors, Fuel element clusters), (*Fuel element clusters, Heat transfer), (*Two-phase flow, *Research programs), (*Heat transfer, Research programs), Air, Fuel channels, Spacers, Steam, Water.

For abstract, see NSA 28 04, number 08089.

GEAP-10542/GA PC$5.50/MF$1.45
General Electric CO., San Jose, Calif. Nuclear Fuels Dept.
HIGH POWER DENSITY DEVELOPMENT PROJECT: BIG ROCK POINT REACTOR DEVELOPMENTAL FUEL TESTING. FINAL SUMMARY REPORT.
V. E. Hazel, and R. N. Duncan. Mar 72, 66p
Contract AT(04-3)-361

Descriptors: (*Bwr type reactors, Fuel elements), (*Big rock point reactor, Fuel elements), (*Fuel elements, *Performance testing), Fuel assemblies, Fuel cans, Incoloy 800, Inconel 600, Stainless steel-304, Uranium dioxide, Zircaloy-2.

For abstract, see NSA 28 04, number 09955.

GEAP-13823-1/GA PC$3.50/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
LMFBR HOT CELL REFUELING COMPONENT TESTS. FIRST QUARTERLY REPORT, OCTOBER 1971--MARCH 1972.
May 72, 29p
Contract AT(04-3)-189

Descriptors: (*Fbr type reactors, *Reactor fueling), (*Sodium cooled reactors, Reactor fueling), Containers, Cranes, Design, Hot cells, Reactor charging machines, Remote handling, Remote handling equipment, Testing.

For abstract, see NSA 28 04, number 10004.

GEAP-13823-4/GA PC$4.75/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
LMFBR HOT CELL REFUELING COMPONENT TESTS. FOURTH QUARTERLY REPORT, OCTOBER--DECEMBER 1972.
Jan 73, 53p
Contract AT(04-3)-189

Descriptors: (*Fbr type reactors, Reactor fueling), (*Sodium cooled reactors, Reactor fueling), (*Reactor fueling, *Remote handling equipment), Containers, Design, Hot cells, Reactor charging machines.

For abstract, see NSA 28 04, number 10006.

GERHTR-44/GA PC$3.00/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Institut fuer Reaktorwerkstoffe.
INVESTIGATIONS ON THE PREPARATION OF UO SUB 2 MICROSPHERES BY INTERNAL GELATION OF A UO SUB 2 SOL AND FROM A URANIUM(VI) SOLUTION.
R. Foerthmann, A. Naoumidis, H. Nickel, and W. Burck. Apr 70, 19p JUL-655-RW
U.S. Sales Only.

Descriptors: (*Uranium dioxide, *Chemical preparation), (*Uranium trioxide, Chemical preparation), (*Sol-gel process, *Performance), (*Nuclear fuels, *Spheres), Heat treatments, Sintering, Size, Solutions.

For abstract, see NSA 28 04, number 08549.

GERHTR-72/GA PC$3.25/MF$1.45
Kernforschungsanlage, Juelich (West Germany).
DEVELOPMENT OF COATED FUEL PARTICLES FOR INCREASED SAFETY REQUIREMENTS.
R. Foerthmann, E. Gyarmati, K. Hilpert, and H. Nickel. 9 Feb 73, 25p
U.S. Sales Only.

Descriptors: (*Fuel elements, *Fabrication), (*Htgr type reactors, Fuel elements), (*Coated fuel particles, *Chemical reactions), (*Fission products, Chemical reactions), Aluminium oxides, Barium oxides, Ceramics, Cesium oxides, Safety, Silicon carbides, Silicon oxides, Strontium oxides.

For abstract, see NSA 28 05, number 11129.

GERHTR-83/GA PC$3.25/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Institut fuer Chemische Technologie.
OFF-GAS TREATMENT AND KRYPTON DISPOSAL IN HTGR-FUEL ELEMENT REPROCESSING.
M. Laser, H. Beaujean, J. Bohnenstingl, P. Filss, and M. Heidendael. 1972, 21p
U.S. Sales Only.

Descriptors: (*Krypton, Radioactive waste disposal), (*Tritium, *Radioactive waste processing), (*Iodine, Radioactive waste processing), (*Radioactive waste disposal, *Marine disposal), Comparative evaluations,

Economics, Reprocessing, Separation processes, Spent fuel elements.

For abstract, see NSA 28 04, number 08022.

GERHTR-85/GA PC$3.25/MF$1.45
Kernforschungsanlage, Juelich (West Germany).
HIGH TEMPERATURE VOLATILIZATION OF NEODYMIUM FROM THORIUM CARBIDE PARTICLES.
L. A. Podo, and H. Nickel. Sep 67, 25p JUL-502-RG-RW
U.S. Sales Only.

Descriptors: (*Thorium carbides, *Chemical preparation), (*Thorium carbides, *Decontamination), (*Neodymium, *Volatilization), Breeder reactors, Heating, Reprocessing, Separation processes, Sol-gel process, Spent fuels, Very high temperature, Volatility.

For abstract, see NSA 28 05, number 10771.

GU-5297/GA PC$5.50/MF$1.45
Gulf United Nuclear Fuels Corp., Elmsford, N.Y.
ENRICHED URANIUM ACTIVE ASSAY PROGRAM. FINAL REPORT.
R. D. Schamberger, and W. L. Brooks. 1 May 73, 70p
Contract AT(30-1)-65

Descriptors: (*Enriched uranium, *Qualitative chemical analysis), (*Neutron sources, *Design), (*Neutron detectors, Design), (*Nuclear materials management, *Research programs), Accelerators, Containers, Failures, Fissile materials, Inventories, Neutron detection, Operation, Performance, Reprocessing, Safeguards, Shielding, Transport, U3o8.

For abstract, see NSA 28 04, number 08829.

GULF-GA-A-12530/GA PC$7.75/MF$1.45
Gulf General Atomic CO., San Diego, Calif.
GAS-COOLED FAST BREEDER REACTOR. QUARTERLY PROGRESS REPORT, NOVEMBER 1, 1972--JANUARY 31, 1973.
8 Mar 73, 111p
Contract AT(04-3)-167

Descriptors: (*Gcfr reactor, *Research programs), (*Fuel rods, *Spacers), Planning, Configuration, Physical radiation effects, Reactor cores, Testing, Fuel densification, Solid fuels, Criticality, Delayed neutron fraction, Doppler coefficient, Neutron flux, Reactivity worths, Reactor kinetics, Design, Heat transfer, Melting, Natural convection, Performance, Thermal shields.

For abstract, see NSA 28 04, number 10009.

GULF-GA-B-12409/GA PC$5.25/MF$1.45
Gulf General Atomic CO., San Diego, Calif.
THERMOCHEMICAL STABILITY OF IRRADIATED HTGR FUEL PARTICLES.
C. B. Scott. 1 May 73, 63p
Contract AT(04-3)-167

Descriptors: (*Coated fuel particles, *Physical radiation effects), (*Uranium dioxide, Physical radiation effects), (*Thorium carbides, Physical radiation effects), (*Thorium oxides, Physical radiation effects), Annealing, Coatings, Density, Deposits, Diffusion, Distribution, Electron probes, Fast neutrons, Fission products, Gamma spectroscopy, Htgr type reactors, Neutron beams, Pyrolytic carbon, Silicon carbides, Stability, Stresses, Temperature dependence, Uranium carbides, Very high temperature.

For abstract, see NSA 28 06, number 13118.

HEDL-SA-297/GA PC$3.00/MF$1.45
Hanford Engineering Development Lab., Richland, Wash.
X-RAY REAL-TIME IMAGING FOR NONDESTRUCTIVE TESTING OF FAST FLUX TEST FACILITY FUEL PINS.
C. N. Jr. Jackson, and W. H. Gray. Sep 71, 19p CONF-720225-2
Contract AT(45-1)-2170

Descriptors: (*Fftf reactor, Fuel pins), (*Fuel pins, X-ray radiography), (*X-ray radiography, Fuel pins), Camera tubes, Cost, Design, Inspection, Operation, Performance, Real time systems.

For abstract, see NSA 28 06, number 14473.

HEDL-SA-546/GA PC$4.00/MF$1.45
Hanford Engineering Development Lab., Richland, Wash.
MATERIALS CONSIDERATIONS IN THE FAST FLUX TEST REACTOR.
W. F. Sheely. 36p CONF-730333-1
Contract AT(45-1)-2170

Descriptors: (*Fftf reactor, *Reactor materials), Design, Plutonium oxides, Reactor components, Sodium, Stainless steels, Uranium dioxide.

For abstract, see NSA 28 06, number 14474.

HW-53455/GA PC$3.00/MF$1.45
General Electric CO., Richland, Wash. Hanford Atomic Products Operation.
FLUORIMETRIC URANIUM ANALYSIS WITH A HIGH CARBONATE FLUX.
M. H. Campbell. 1 Nov 57, 16p
Contract W-31-109-Eng-52

Descriptors: (*Uranium, *Fluorimetry), Metallurgical flux, Nitric acid, Quantitative chemical analysis, Sodium carbonates.

For abstract, see NSA 28 06, number 12643.

ICP-1016/GA PC$5.45/MF$1.45
Allied Chemical Corp., Idaho Falls, Idaho. Idaho Chemical Programs Operations Office.
DEVELOPMENT OF PROCESSES AND EQUIPMENT FOR RECOVERING URANIUM FROM ROVER-FUELS-BURNER ASH.
G. W. Hogg, J. A. Rindfleisch, P. E. LaMont, L. C. Borduin, and G. W. Lohman. May 73, 58p
Contract AT(10-1)-1375

Descriptors: (*Spent fuels, *Reprocessing), (*Uranium, *Separation processes), Combustion, Fluidized bed reactors, Research programs, Residues, Rover reactors, Solubility.

For abstract, see NSA 28 06, number 12781.

ICP-1022/GA PC$5.45/MF$1.45
Allied Chemical Corp., Idaho Falls, Idaho. Idaho Chemical Programs Operations Office.
IDAHO CHEMICAL PROGRAMS ANNUAL TECHNICAL REPORT, FISCAL YEAR 1972.
Apr 73, 118p
Contract AT(10-1)-1375

Descriptors: (*Spent fuels, *Research programs), (*Waste management, Research programs), Leading abstract, Reprocessing.

For abstract, see NSA 28 06, number 12782.

ICP-1024/GA PC$4.00/MF$1.45
Allied Chemical Corp., Idaho Falls, Idaho. Idaho Chemical Programs Operations Office.
CO-PROCESSING OF ZIRCONIUM AND ALUMINUM FUELS DURING 1972.
R. N. Henry, C. L. Bendixsen, and R. D. Bradley. May 73, 41p
Contract AT(10-1)-1375

Descriptors: (*Spent fuels, *Reprocessing), (*Zirconium, *Solvent extraction), (*Aluminium, Solvent extraction), (*Uranium, Solvent extraction), Aluminium alloys, Extraction columns, Fuel cans, Gadolinium, Nuclear poisons, Research programs, Zirconium alloys.

For abstract, see NSA 28 06, number 12785.

JAERI-M-5015/GA PC$5.45/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
DESIGN AND CONSTRUCTION OF THE POISON CURTAIN FOR JPDR-II.
F. Izumi, A. Morishima, Y. Harayama, M. Fujita, and T. Shirotori. Oct 72, 60p
In Japanese. U.S. Sales Only.

Descriptors: (*Jpdr-2 reactor, *Poisoning), Boron additions, Design, Fabrication, Fuel assemblies, Plates, Stainless steel-304, Swelling.

For abstract, see NSA 28 04, number 09958.

KFK-1776/GA PC$3.75/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Kernverfahrenstechnik.
PROCESS SCHEME AND GENERAL INSTRUCTIONS FOR BUILDING A TECHNICAL SEPARATION NOZZLE CASCADE FOR URANIUM-235 ENRICHMENT.
R. Luecke, and F. Weis. Mar 73, 34p
In German. U.S. Sales Only.

Descriptors: (*Uranium 235, Separation nozzle method), (*Separation nozzle method, *Design), Enriched uranium, Maintenance, Operation, Safety.

For abstract, see NSA 28 04, number 08305.

KFK-1777/GA PC$3.75/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Kernverfahrenstechnik.
ELECTROFORMING METHOD FOR PRODUCTION OF SEPARATION NOZZLE ELEMENTS FOR THE ENRICHMENT OF URANIUM-235.
P. Happe, and F. Weis. Mar 73, 36p
In German. U.S. Sales Only.

Descriptors: (*Uranium 235, *Separation nozzle method), (*Nozzles, *Fabrication), Economics, Enriched uranium.

For abstract, see NSA 28 04, number 08306.

KFK-1781/GA PC$3.00/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Material und Festkoerperforschung.
POST-SINTERING QUALITY OF UO SUB 2 -- PUO SUB 2 FUEL PELLETS.
Th. Dippel, and E. Guenther. Mar 73, 19p
In German. U.S. Sales Only.

Descriptors: (*Plutonium oxides, *Sintering), (*Uranium dioxide, Sintering), (*Fuel pellets, *Density), Calcination, Fabrication, Powders, Shrinkage, Temperature dependence.

For abstract, see NSA 28 05, number 11131.

LA-UR-73-764/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
MATERIALS COMPATIBILITY PROBLEM IN SNAP FUEL CAPSULES.
R. N. R. Mulford, and S. E. Bronisz. 11p CONF-730801-2

Descriptors: (*Tantalum alloy-t111, *Compatibility), (*Plutonium 238, Compatibility), (*Snap 19 battery, *Capsules), (*Molybdenum alloys, Compatibility), Cermets, Chemical reactions, Plutonium oxides, Reaction kinetics, Very high temperature, Platinum base alloys, Rhodium alloys, Tantalum base alloys, Tungsten alloys, Rhenium alloys.

For abstract, see NSA 28 06, number 13177.

LA-5284-PR/GA PC$4.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ADVANCED PLUTONIUM FUELS PROGRAM. QUARTERLY REPORT, JANUARY 1--MARCH 31, 1973.
R. D. Baker. May 73, 29p
Contract W-7405-eng-36

Descriptors: (*Fbr type reactors, *Nuclear fuels), (*Uranium carbides, *Physical radiation effects), (*Plutonium carbides, Physical radiation effects), (*Uranium nitrides, Physical radiation effects), Plutonium, Quality control, Titration, Uranium, Voltametry, Plutonium nitrides, Testing, Stainless steels, Tantalum, X-ray fluorescence analysis, Boron carbides, Chemical analysis.

For abstract, see NSA 28 05, number 11133.

N-73-14710/GA PC$5.45/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA. Astronuclear Lab.
FABRICATION OF FUEL PIN ASSEMBLIES: PHASE 3, FINAL REPORT.
A. R. Keeton, and L. G. Stemann. Dec 72, 130p
NASA-CR-120956, WANL-M-FR-72-4
Contract NAS3-14415

Descriptors: (*Space power reactors, Fuel pins), (*Liquid metal cooled reactors, Fuel pins), (*Fuel pins, *Fabrication), Fuel pellets, Hafnium alloys, Irradiation, Lithium, Tantalum alloys, Testing, Tungsten alloys, Uranium nitrides.

For abstract, see NSA 28 04, number 10038.

N-73-16638/GA PC$4.00/MF$1.45
National Aeronautics and Space Administration, Cleveland, Ohio. Lewis Research Center.
THEORETICAL ANALYSIS OF SWELLING CHARACTERISTICS OF CYLINDRICAL URANIUM DIOXIDE FUEL PINS WITH A NIOBIUM--1-PERCENT-ZIRCONIUM CLAD.
J. F. Saltsman. Feb 73, 45p NASA-TM-X-2717, E-7135

Descriptors: (*Fuel pins, *Physical radiation effects), (*Niobium base alloys, Physical radiation effects), (*Zirconium alloys, Physical radiation effects), (*Uranium dioxide, Physical radiation effects), Creep, Fuel cans, High temperature, Isotropy, Low temperature, Medium temperature, Strains, Swelling, Very high temperature.

For abstract, see NSA 28 06, number 13121.

NAA-SR-Memo-8348/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
POST IRRADIATION ANNEALING STUDIES ON LIGHTLY IRRADIATED ZR--U--H FUEL SYSTEMS.
A. H. Willis, and A. J. Moses. 21 Mar 63, 25p
Contract AT(11-1)-GEN-8

Descriptors: (*Uranium alloys, *Physical radiation effects), (*Zirconium hydrides, Physical radiation effects), (*Snap reactors, *Fuel elements), Annealing, Burnup, Cracks, Diffusion, Fission products, Gases, Losses, Phase transformations, Surfaces.

For abstract, see NSA 28 05, number 11138.

NAA-SR-Memo-8405/GA PC$3.00/MF$1.45
Atomics International, Canoga Park, Calif.
ATOMICS INTERNATIONAL CONTRIBUTION TO THE 16TH HIGH TEMPERATURE FUELS COMMITTEE, SECTION II.
(nd). 15p

Descriptors: (*S10 reactor, *Fuel elements), (*S8 reactor, Fuel elements), Brittleness, Carbon additions, Ductility, Fission products, Heating, Hydrogen additions, Irradiation, Mechanical vibrations, Reactor operation, Reactor start-up, Testing, Thermal cycling.

For abstract, see NSA 28 06, number 14563.

NAA-SR-10851/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
IRRADIATION STABILITY OF AI 8763D HYDROGEN BARRIER MATERIAL.
C. J. Engberg. 15 Apr 65, 44p
Contract AT(11-1)-GEN-8

Descriptors: (*Uranium alloys, *Physical radiation effects), (*Zirconium base alloys, Physical radiation effects), (*Hastelloys, Physical radiation effects), Closures, Diffusion, Fast neutrons, Fuel cans, Fuel elements, High temperature, Hydrides, Hydrogen, Neutron beams, S8er reactor.

For abstract, see NSA 28 05, number 11137.

NAA-SR-9633/GA PC$6.25/MF$1.45
Atomics International, Canoga Park, Calif.
EFFECTS OF IRRADIATION ON HYDRIDED ZIRCONIUM--URANIUM ALLOY NAA-53 EXPERIMENTS.
J. R. Miller, and D. A. Polak. 30 Dec 64, 84p
Contract AT(11-1)-Gen-8

Descriptors: (*Uranium alloys, *Physical radiation effects), (*Zirconium hydrides, Physical radiation effects), (*S8er reactor, *Fuel elements), Capsules, Coatings, Correlations, Diffusion, Fission products, Gases, Hydrogen, Microstructure, Operation, Swelling.

For abstract, see NSA 28 05, number 11319.

NAA-SR-9875/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
PARAMETRIC STUDIES ON THE SHORT-TERM TENSILE MECHANICAL PROPERTIES OF ZR--10 U ALLOY HYDRIDES.
L. B. Lundberg. 15 Jul 64, 43p
Contract AT(11-1)-Gen-8

Descriptors: (*Zirconium hydrides, *Mechanical properties), (*Uranium alloys, Mechanical properties), Carbon additions, Chemical composition, Fuel elements, High temperature, Hydrogen additions, Medium temperature, Snap reactors, Temperature dependence, Very high temperature.

For abstract, see NSA 28 06, number 13257.

N73-29715/2GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
URANIUM DIOXIDE FUEL CLADDING STRAIN INVESTIGATION WITH THE USE OF CYGRO-2 COMPUTER PROGRAM.
J. R. Smith. Jul 73, 16p NASA-TM-X-68281, E-7447

Descriptors: *Cladding, *Computer programs, *Irradiation, *Stresses, *Uranium oxides, Nuclear fuel elements, Radiation effects, Tungsten alloys.

For abstract, see STAR 1120

N73-29716/0GA PC$4.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
PRELIMINARY ANALYSIS OF HOT SPOT FACTORS IN AN ADVANCED REACTOR FOR SPACE ELECTRIC POWER SYSTEMS.
P. H. Lustig, A. G. Holms, and H. W. Davison. Apr 73, 38p NASA-TM-X-68217

Descriptors: *Nuclear fuel elements, *Nuclear power reactors, *Temperature effects, *Temperature measurement, Materials tests, Numerical analysis, Operations research.

For abstract, see STAR 1120

ORNL-TM-4188/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.
EFFECT OF FEF SUB 2 ADDITION ON MASS TRANSFER IN A HASTELLOY N: LIF--BEF S--UF SUB 4 THERMAL CONVECTION LOOP SYSTEM.
J. W. Koger. Dec 72, 23p
Contract W-7405-eng-26

Descriptors: (*Hastelloys, *Corrosion), (*Molten salt fuels, *Corrosive effects), (*Iron fluorides, *Additives), Beryllium fluorides, Compatibility, High temperature, Lithium fluorides, Mass transfer, Mixtures, Uranium tetrafluoride.

For abstract, see NSA 28 06, number 13178.

ORNL-4461/GA PC$4.25/MF$1.45
Oak Ridge National Lab., Tenn.
EFFECTS OF IRRADIATION ON URANIUM NITRIDE UNDER SPACE-REACTOR CONDITIONS.
S. C. Weaver, J. L. Scott, R. L. Senn, and B. H. Montgomery. Oct 69, 42p
Contract W-7405-eng-26

Descriptors: (*Uranium nitrides, *Physical radiation effects), (*Fuel pins, *Performance testing), (*S50 reactor, Fuel pins), Burnup, Carbon additions, Irradiation, Lithium, Microstructure, Niobium alloys, Swelling, Zirconium alloys.

For abstract, see NSA 28 06, number 14564.

ORNL-4628/GA PC$5.45/MF$1.45
Oak Ridge National Lab., Tenn.
ORIGEN: THE ORNL ISOTOPE GENERATION AND DEPLETION CODE.
M. J. Bell. May 73, 148p
Contract W-7405-eng-26

Descriptors: (*Computer codes, *O codes), (*Spent fuels, *Isotope ratio), Burnup, Daughter products, Decay, Fission products, Fuel cans, Gamma spectra, Mathematical models, Nuclear fuels, Nuclear reaction yield, Radioactivity.

For abstract, see NSA 28 04, number 10181.

ORNL-4875/GA PC$5.45/MF$1.45
Oak Ridge National Lab., Tenn.
FUEL-CLADDING MECHANICAL INTERACTION AND GAS PRESSURE BUILDUP IN A SHORTENED FTR-TYPE FUEL PIN.
R. B. Fitts, B. Fleischer, and R. L. Senn. Jun 73, 102p
Contract W-7405-eng-26

Descriptors: (*Fftf reactor, *Fuel pins), Burnup, Fission products, Fuel cans, Fuel-cladding interactions, Performance testing, Reactor operation, Stainless steel-316, Thermal expansion.

For abstract, see NSA 28 06, number 14479.

ORO-711/GA PC$3.25/MF$1.45
Oak Ridge Operations (Aec), Tenn. (Usa). Research and Technical Support Div.
NUCLEAR FUEL CYCLE. TRANSPORTATION REQUIREMENTS WITHIN THE SOUTHERN INTERSTATE NUCLEAR BOARD REGION THROUGH 1980. SINB/AEC WORK CONFERENCE ON TRANSPORTATION OF RADIOACTIVE MATERIALS, OAK RIDGE, TENNESSE, MAY 16--17, 1973.
1973, 24p

Descriptors: (*Fuel cycle, *Transport), (*Nuclear fuels, Transport), Casks, Design, Meetings, Uranium dioxide, Uranium hexafluoride.

For abstract, see NSA 28 05, number 11366.

PATENT-3 725 294/GA Not available NTIS
Atomic Energy Commission, Washington, D.C.
METHOD FOR DISSOLVING PULTONIUM DIOXIDE.
Patent,
Ronald L. Deaton, and Gary I. Silver. Filed 27 Jan 72, patented 3 Apr 73, 3p PAT-APPL-221 255
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Plutonium oxides, Dissolving), (*Patents, Plutonium oxides), (*Nuclear fuel elements, Dissolving), Nitric acid, Hydrofluoric acid, Reducing atmopheres.
Identifiers: PAT-CL-252-301-1-R.

The invention comprises heating plutonium dioxide under controlled temperature, pressure, and atmosphere conditions for a suffcient time until the conversion to a lower oxide, such as diplutonium trioxide, is generally effected, cooling under controlled conditions to prevent reoxidation, and dissolving the cooled product with a suitable acid or acid mixture.

PATENT-3 736 833/GA Not available NTIS
Atomic Energy Commission, Washington, D.C.
SCAVENGERS FOR RADIOACTIVE IODINE.
Patent,
George E. Cremeans, David A. Berry, Harvey S. Rosenberg, Joseph M. Genco, and David L. Morrison. Filed 17 May 71, patented 1 May 73, 5p PAT-APPL-144 298
Previously filed at PAT-APPL-803 465, 28 Feb 69.
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Patents, Coatings), (*Coatings, Chemisorption), (*Iodine 131, *Chemisorption), Polyamide resins, Polyacrylates, Nuclear reactor coolants, Epoxy resins, Titanium dioxide, Crosslinking.
Identifiers: PAT-CL-176-37, Loss of coolant accidents.

The patent describes a surface coating for absorbing radioactive vapor phase iodine and radioactive vapor-phase methyl iodide to be applied to the inside of a containment vessel for a water-cooled power reactor. The active ingredients of the surface coating may be polyacrylamines and combinations of polyacrylamines and amine-terminated polyamides. The active polymer ingredients are cross-linked to provide the physical characteristics necessary to withstand the environmental conditions present in a containment vessel subsquent to a loss-of-coolant accident.

PNCT-831-72-3/GA PC$8.50/MF$1.45
Power Reactor and Nuclear Fuel Development Corp., Tokai (Japan).
TOKAI WORKS SEMIANNUAL PROGRESS REPORT, JANUARY–JUNE 1972.
Dec 72, 128p
U.S. Sales Only.

Descriptors: (*Fuel elements, *Fabrication), (*Plutonium oxides, *Production), (*Uranium dioxide, Production), (*Uranium isotopes, *Isotope separation), Fuel pellets, Centrifugation, Reprocessing, Safety, Fbr type reactors, Japan, Joyo reactor, Monju reactor, Nuclear fuels, Radiation protection, Research programs, Creep, Mechanical properties, Powders.

For abstract, see NSA 28 05, number 11142.

PNCT-841-72-14/GA PC$4.00/MF$1.45
Power Reactor and Nuclear Fuel Development Corp., Tokai (Japan).
EXTRACTION PROCESSES ON REPROCESSING OF FAST REACTOR FUEL IN A PUREX PLANT CONSTRUCTED FOR LIGHT WATER REACTOR FUEL.
K. Gonda, S. Yasu, N. Kawashima, T. Hoshino, and C. Tanaka. May 72, 25p
U.S. Sales Only.

Descriptors: (*Spent fuels, *Reprocessing), Joyo reactor, Plutonium, Purex process, Solvent extraction, Tbp, Uranium.

For abstract, see NSA 28 04, number 08040.

PWAC-459/GA PC$4.50/MF$1.45
Pratt and Whitney Aircraft, Middletown, Conn.
LCRE REACTOR PRESSURE VESSEL REPORT.
V. J. Vitali, and R. L. Neumeister. 28 May 65, 48p
Contract AT(30-1)-2789

Descriptors: (*Lcre reactor, *Pressure vessels), Medium pressure, Performance testing, Stresses, Very high temperature.

For abstract, see NSA 28 06, number 14480.

RFP-131/GA PC$3.00/MF$1.45
Dow Chemical CO., Denver, Colo. Rocky Flats Plant.
LARGE SCALE REDUCTION OF HIGHLY ENRICHED URANIUM.
R. P. Craig, R. F. Peluso, and R. E. Troeltzsch. 26 Jan 59, 19p
Contract AT(29-1)-1106

Descriptors: (*Highly enriched uranium, *Criticality), (*Uranium tetrafluoride, *Reduction), Production, Uranium.

For abstract, see NSA 28 05, number 11367.

RFP-2034/GA PC$4.00/MF$1.45
Dow Chemical U.S.a., Golden, Colo. Rocky Flats Div.
CRITICALITY CALCULATIONS FOR PLUTONIUM NITRATE SOLUTIONS.
D. Dickinson. 9 May 73, 4p
Contract AT(29-1)-1106

Descriptors: (*Plutonium nitrates, *Criticality), Density, Mathematics, Solutions, Water.

For abstract, see NSA 28 06, number 13407.

SGAE-2100/GA PC$3.00/MF$1.45
Oesterreichische Studiengesellschaft fuer Atomenergie G.M.B.H., Seibersdorf.
ON-LINE DETERMINATION OF SPHERICITY, COATING THICKNESS, AND DENSITY OF FUEL PARTICLES.
P. Koss, and K. Wallisch. Feb 73, 9p CONF-720475-2
U.S. Sales Only.

Descriptors: (*Coatings, *Density), (*Coated fuel particles, *Size), (*On-line measurement systems, *Performance), Measuring methods, Particle size, Spheres, Thickness.

For abstract, see NSA 28 05, number 10805.

SLA-73-5153/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
NONDESTRUCTIVE TESTING OF PULSED REACTOR FUELS.
J. A. Horak, M. M. Karnowsky, and D. J. Sasmor. 2p CONF-730611-6

Descriptors: (*Spr-2 reactor, *Control elements), Density, Dyes, Failures, Fuel plates, Nondestructive testing, Ultrasonic testing, Underwater, X-ray radiography.

For abstract, see NSA 28 05, number 12081.

SURRC-47/73/GA PC$4.25/MF$1.45
Scottish Research Reactor Centre, East Kilbride (Scotland).
FUEL PLATE TEMPERATURES FOLLOWING SHUTDOWN OF THE SCOTTISH UNIVERSITIES RESEARCH AND REACTOR CENTRE REACTOR: THEORETICAL AND EXPERIMENTAL RESULTS.
J. A. Riley, and S. R. Donald. 1972, 44p
U.S. Sales Only.

Descriptors: (*Srrc-utr-100 reactor, *Fuel plates), Data, Mathematical models, Reactor operation, Reactor shutdown, Temperature dependence.

For abstract, see NSA 28 05, number 12083.

TID-26209/GA PC$5.45/MF$1.45
Allied Chemical Corp., Idaho Falls, Idaho. Idaho Chemical Programs Operations Office. Argonne National Lab., Ill. Los Alamos Scientific Lab., N. Mex.
BURNUP DETERMINATION FOR FAST REACTOR FUELS: REVIEW AND STATUS OF THE NUCLEAR DATA AND ANALYTICAL CHEMISTRY METHODOLOGY REQUIREMENTS.
W. J. Maeck, R. P. Larsen, and J. E. Rein. Feb 73, 87p

Descriptors: (*Fission yield, *Measuring methods), (*Nuclear fuels, *Burnup), Breeder reactors, Fission products, Isotope ratio.

For abstract, see NSA 28 05, number 10666.

UCRL-74514/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
PHYSICAL SECURITY: TODAY.
R. C. Becker. 29 May 73, 5p CONF-730630-1

Descriptors: (*Lawrence livermore laboratory, *Security), (*Nuclear materials management, Security), Alarm systems, Remote viewing equipment, Safeguards.

For abstract, see NSA 28 06, number 13395.

WARD-5797/GA PC$4.50/MF$1.45
Westinghouse Electric Corp., Madison, PA. Advanced Reactors Div.
STRUCTURAL MATERIALS ASPECTS OF LMFBR CORE RESTRAINT SYSTEM DESIGN.
W. E. Pennell. Feb 72, 50p CONF-720420-10
Contract AT(45-1)-2171

Descriptors: (*Fbr type reactors, Reactor core restraints), (*Sodium cooled reactors, Reactor core restraints), (*Reactor core restraints, *Performance), (*Stainless steels, *Physical radiation effects), Austenite, Burnup, Creep, Design, Mechanical structures, Reactor cores, Reactor materials, Supports, Swelling.

For abstract, see NSA 28 06, number 14427.

WARD-5918/GA PC$3.00/MF$1.45
Westinghouse Electric Corp., Madison, PA. Advanced Reactors Div.
MIXING MODEL FOR WIRE WRAP FUEL ASSEMBLIES.
E. H. Novendstern. 1972, 16p CONF-721109-25
Contract AT(45-1)-2171

Descriptors: (*Fuel assemblies, *Heat transfer), (*Sodium cooled reactors, Fuel assemblies), (*Fbr type reactors, Fuel assemblies), C codes, Computer codes, Experimental channels, Fftf reactor, Fuel pins, Liquid flow, Mass transfer, Mathematical models, Mixing, Spacers, Thermal conduction, Turbulent flow.

For abstract, see NSA 28 06, number 14429.

18K. Reactor Physics

AAEC/TM-620/GA PC$5.00/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
SUITABILITY OF VARIOUS ACCELERATOR TYPES AS NEUTRON SOURCES FOR PULSED EXPERIMENTS IN FAST REACTOR ASSEMBLIES.
A. I. M. Ritchie. Nov 72, 56p
U.S. Sales Only.

Descriptors: (*Fast reactors, *Pulsed neutron techniques), (*Cyclotrons, Pulsed neutron techniques), (*Linear accelerators, Pulsed neutron techniques), Counting rates, Energy spectra, Neutron sources, Subcritical assemblies, Time-of-flight method, Zero power reactors.

For abstract, see NSA 28 04, number 10018.

AEEW-R-791/GA PC$4.50/MF$1.45
Atomic Energy Establishment, Winfrith (England).
JOSHUA II: A THREE-DIMENSIONAL, COUPLED NEUTRONICS--HYDRAULICS CALCULATION SCHEME FOR THE WINFRITH SGHWR.
R. S. Siudek. Feb 72, 46p
U.S. Sales Only.

Descriptors: (*Computer codes, *J codes), (*Sghwr reactor, *Hydraulics), Coolants, Fluid flow, Fuel cycle, Multigroup theory, Neutron diffusion equation, Nuclear materials management, Reactivity, Reactor cores, Reactor fueling, Reactor kinetics, Three-dimensional calculations.

For abstract, see NSA 28 05, number 12065.

AEEW-R-816/GA PC$5.25/MF$1.45
Atomic Energy Establishment, Winfrith (England).
XENFER: A FORTRAN CODE FOR THE CALCULATION OF SPATIAL TRANSFER FUNCTIONS OF THERMAL REACTORS SUBJECT TO XENON POISON EFFECTS.
D. H. Owens. Feb 73, 64p
U.S. Sales Only.

Descriptors: (*Computer codes, *X codes), (*Thermal reactors, *Poisoning), Feedback, Fortran, Multigroup theory, Neutron diffusion equation, Reactivity coefficients, Reactor control systems, Transfer functions, Xenon.

For abstract, see NSA 28 05, number 12149.

AEEW-R-817/GA PC$5.25/MF$1.45
Atomic Energy Establishment, Winfrith (England).
CALCULATION OF NUCLEAR REACTOR SPATIAL TRANSFER FUNCTIONS USING THE COMPUTER PROGRAMME XENFER.
D. H. Owens. May 73, 62p
U.S. Sales Only.

Descriptors: (*Reactor stability, *Transfer functions), Computer codes, Configuration, Errors, Neutron flux, Poisoning, Reactor kinetics, Space dependence, Transients, X codes, Xenon, Xenon.

For abstract, see NSA 28 06, number 14665.

AEEW-R-839/GA PC$3.25/MF$1.45
Atomic Energy Establishment, Winfrith (England).
TRICEPS: A THREE DIMENSIONAL COLLISION PROBABILITY COMPUTATIONAL SUITE.
D. W. G. Harris. Feb 73, 22p
U.S. Sales Only.

Descriptors: (*Computer codes, *T codes), (*Reactor cells, *Neutron transport theory), Collisions, F codes, Neutron beams, Neutrons, Number codes, Probability, Reactor kinetics, Reactor lattices, Three-dimensional calculations, W codes.

For abstract, see NSA 28 05, number 12150.

AEEW-R-847/GA PC$3.00/MF$1.45
Atomic Energy Establishment, Winfrith (England).
OBJECTIVES FOR AN HTR R AND D PHYSICS PROGRAMME.
I. Johnstone, and J. A. Scott. Jan 73, 14p CONF-730114-2
U.S. Sales Only.

Descriptors: (*Htgr type reactors, *Reactor kinetics), Data, Economics, Reactor safety, Research programs.

For abstract, see NSA 28 04, number 09982.

AEEW-R-858/GA PC$3.00/MF$1.45
Atomic Energy Establishment, Winfrith (England).
CALCULATIONS OF THE THREE-DIMENSIONAL POWER DISTRIBUTION IN THE FORT ST. VRAIN REACTOR USING U.K. METHODS AND DATA.
D. W. Anderson. Apr 73, 12p
U.S. Sales Only.

Descriptors: (*Vrain reactor, *Power density), Distribution, Reactivity, Reactor kinetics, Three-dimensional calculations.

For abstract, see NSA 28 06, number 14353.

AI-AEC-13059/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
LMFBR PHYSICS PROGRAMS. QUARTERLY TECHNICAL PROGRESS REPORT, JANUARY--MARCH 1973.
15 May 73, 12p
Contract AT(04-3)-824

Descriptors: (*Fbr type reactors, *Reactor kinetics), (*Sodium cooled reactors, Reactor kinetics), Computer codes, Cross sections, Data, Monte carlo method, Neutron reactions, Research programs.

For abstract, see NSA 28 06, number 14395.

AI-AEC-13076(Vol.3)/GA PC$5.00/MF$1.45
Atomics International, Canoga Park, Calif.
SELECTED COMPUTER CODES AND LIBRARIES. VOLUME III. COMPOZ: A MULTIGROUP TRANSPORT PERTURBATION CODE.
V. S. Lekach. 24 May 73, 59p
Contract AT(04-3)-701

Descriptors: (*Computer codes, C codes), (*C codes, *Neutron transport theory), (*Reactivity worths, *Computer calculations), Cross sections, Data, Perturbation theory.

For abstract, see NSA 28 04, number 10172.

CEA-N-1579/GA PC$4.25/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
CALCULATION OF THE NEUTRON SPECTRUM IN THE LOWER PART OF THE PHENIX EXCHANGER USING TRIPOLI.
J. C. Nimal, and T. Vergnaud. Feb 73, 43p
In French. U.S. Sales Only.

Descriptors: (*Phenix reactor, *Heat exchangers), Biological shields, Energy spectra, Monte carlo method, Neutron flux, Neutron spectra, Neutron transport theory, Secondary coolant circuits, Sodium, T codes, Three-dimensional calculations.

For abstract, see NSA 28 06, number 14399.

CONF-730611-3/GA PC$3.00/MF$1.45
Princeton Univ., N. J. Plasma Physics Lab.
GENERALIZED SOURCE MULTIPLICATION METHOD.
E. Greenspan. 1972, 7p
Contract AT(11-1)-3073

Descriptors: (*Reactivity, *Measuring methods), Criticality, Neutron flux, Neutron sources, Reactors.

For abstract, see NSA 28 04, number 10174.

CONF-730611-4/GA PC$3.00/MF$1.45
Princeton Univ., N. J. Plasma Physics Lab.
METHODS TO ACCOUNT FOR FINE-STRUCTURE EFFECTS IN MULTIGROUP REACTIVITY CALCULATIONS.
E. Greenspan. 1972, 5p
Contract AT(11-1)-3073

Descriptors: (*Reactivity, *Multigroup theory), Analytical solution, Energy dependence, Fine structure, Group constants, Neutron flux, Perturbation theory, Reactivity worths.

For abstract, see NSA 28 04, number 10175.

CONF-730611-5/GA PC$3.00/MF$1.45
Princeton Univ., N. J. Plasma Physics Lab.
FINE STRUCTURE EFFECTS AND THE CENTRAL WORTH DISCREPANCY.
E. Greenspan. 1972, 6p
Contract AT(11-1)-3073

Descriptors: (*Reactivity worths, *Analytical solution), (*Nuclear fuels, Reactivity worths), Energy dependence, Fine structure, Group constants, Multigroup theory, Neutron flux, Reactor kinetics.

For abstract, see NSA 28 04, number 10176.

COO-2262-2/GA PC$4.00/MF$1.45
Massachusetts Inst. Of Tech., Cambridge. Dept. Of Nuclear Engineering.
ANNUAL PROGRESS REPORT, FY1973.
K. F. Hansen, and A. F. Henry. Apr 73, 37p
Contract AT(11-1)-2262

Descriptors: (*Reactor kinetics, *Research programs), Finite element method, Mathematics, Multigroup theory, Neutron diffusion equation, One-dimensional calculations, Space dependence, Time dependence, Two-dimensional calculations, Variational methods.

For abstract, see NSA 28 06, number 14666.

DUN-7286/GA PC$5.75/MF$1.45
Douglas United Nuclear, Inc., Richland, Wash.
USE OF THE HAMMER SYSTEM FOR EVALUATING LIGHT--WATER MODERATED, CRITICAL ASSEMBLIES.
A. F. Kupinski, and H. Toffer. 30 Oct 70, 73p

Descriptors: (*Zero power reactors, *Reactor kinetics), Buckling, Critical mass, Criticality, Cross sections, H codes, Neutron flux, Reactor cells, Reactor lattice parameters, Reliability, Shape, T codes, Water moderator.

For abstract, see NSA 28 06, number 14667.

EIR-228/GA PC$4.75/MF$1.45
Eidgenoessisches Institut fuer Reaktorforschung, Wuerenlingen (Switzerland).

MEASUREMENT ON A SINGLE FUEL ELEMENT IN PROTEUS.
B. Rueegger. Dec 72, 52p
In French. U.S. Sales Only.

Descriptors: (*Proteus reactor, *Reactor lattice parameters), (*Heavy water moderated reactors, Reactor lattice parameters), Configuration, Conversion ratio, Fission ratio, Fuel assemblies, Fuel elements, Plutonium oxides, Reactivity, Reactor kinetics, Uranium dioxide.

For abstract, see NSA 28 06, number 14470.

EUR-5007/GA PC$3.00/MF$1.45
European Atomic Energy Community, Ispra (Italy). Joint Nuclear Research Center.
ACQUISITION AND PROCESSING OF NEUTRON FLUX DATA FOR REACTIVITY EVALUATION.
M. Bernede, and L. Stanchi. May 73, 13p
U.S. Sales Only.

Descriptors: (*Reactivity, *Measuring methods), (*Neutron flux, *Data acquisition systems), Data processing, Digital computers, Electronic equipment, Reactors.

For abstract, see NSA 28 04, number 10178.

EURFNR-1080/GA PC$4.00/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Neutronenphysik und Reaktortechnik.
INTERCOMPARISON OF DIFFERENTIAL NEUTRON SPECTROMETRY TECHNIQUES IN THE MOL- SIGMA SIGMA FAST ASSEMBLY.
H. Bluhm, G. Fieg, H. Werle, H. Ames, and J. P. Braak. Jul 72, 40p KFK-1658, RCN-172
U.S. Sales Only.

Descriptors: (*Sigma piles, *Neutron spectra), (*Fast neutrons, *Neutron spectroscopy), He-3 counters, Measuring methods, Neutron detectors, Proton recoil detectors.

For abstract, see NSA 28 04, number 10179.

FRNC-TH-381/GA PC$8.50/MF$1.45
Paris Univ., Orsay (France).
REDUCED REACTOR MODEL FOR CALCULATING THE VARIATION IN FLUX AND REACTIVITY RESULTING FROM A PERTURBATION LOCALIZED IN A FAST NEUTRON MULTIPLYING MEDIUM.
D. Akl. 1972, 127p
In French. U.S. Sales Only.

Descriptors: (*Reactors, *Neutron flux), Ermine reactor, Fast neutrons, Perturbation theory, Pile oscillation techniques, Plutonium, Reactivity, Transients, Uranium.

For abstract, see NSA 28 06, number 14670.

GEAP-13771-5/GA PC$5.25/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
CRITICAL EXPERIMENTS AND COOPERATIVE EVALUATIONS PROGRAM. FIFTH QUARTERLY REPORT, OCTOBER--DECEMBER 1972.
Dec 72, 61p
Contract AT(04-3)-189

Descriptors: (*Zppr reactor, *Control rod worths), (*Fbr type reactors, Reactor kinetics), (*Sodium cooled reactors, Reactor kinetics), (*Reactor kinetics, *Research programs), Corrections, Distribution, Neutron transport theory, Power density, Cross sections, Data, Neutron reactions.

For abstract, see NSA 28 04, number 10180.

GEAP-13771-6/GA PC$5.45/MF$1.45
General Electric CO., Sunnyvale, Calif. Breeder Reactor Dept.
CRITICAL EXPERIMENTS AND COOPERATIVE EVALUATIONS PROGRAM. SIXTH QUARTERLY REPORT, JANUARY--MARCH 1973.
Mar 73, 67p
Contract AT(04-3)-893

Descriptors: (*Zppr reactor, *Reactor lattice parameters), (*Fbr type reactors, *Fuel management), (*Sodium cooled reactors, Fuel management), (*Reactor kinetics, *Research programs), Configuration, Control rod worths, Criticality, Reactor cores, Cross sections, Data, Neutrons, Plutonium 239.

For abstract, see NSA 28 06, number 14671.

JAERI-M-4971/GA PC$5.45/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
REACTIVITY WORTH OF THE CONTROL RODS FOR THE HIGH-TEMPERATURE GAS COOLED REACTOR.
Y. Kaneko, F. Akino, R. Kurokawa, and K. Kitadate. Sep 72, 67p
In Japanese. U.S. Sales Only.

Descriptors: (*Htgr type reactors, Control elements), (*Control elements, *Control rod worths), Accuracy, Least square fit, Pulsed neutron techniques, Reactivity worths.

For abstract, see NSA 28 04, number 09983.

JUL-928-RG/GA PC$8.25/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Institut fuer Reaktorentwicklung.
INVESTIGATIONS OF DRIVER-ROD CONFIGURATIONS OF THE CRITICAL FACILITY ITR.
M. Bloser, N. Kirch, F. J. Krings, N. Paul, and A. Naseband. Feb 73, 121p
In German. U.S. Sales Only.

Descriptors: (*Itr reactor, *Design), Beryllium, Critical mass, Fuel elements, Neutron reflectors, Power reactors, Reactivity, Thermionic converters, Zero power reactors.

For abstract, see NSA 28 06, number 14477.

LFEN-145-a/GA PC$4.25/MF$1.45
Junta de Energia Nuclear, Sacavem (Portugal). Laboratorio de Fisica E Engenharia Nucleares.
EXPERIMENTAL STUDY OF DYNAMIC BEHAVIOR OF THE PORTUGUESE RESEARCH REACTOR (RPI).
J. M. Costa Oliveira, C. A. M. Da Veiga, and D. F. Trigueiros. 1972, 44p
In Portuguese. U.S. Sales Only.

Descriptors: (*Jen reactor, *Reactor kinetics), Neutron transfer, Performance testing, Reactivity, Reactor stability, Temperature dependence, Transfer functions.

For abstract, see NSA 28 06, number 14478.

MRR-114/GA PC$4.50/MF$1.45
Technische Universitaet Muenchen, Garching (West Germany). Laboratorium fuer Reaktorregelung und Anlagensicherung.
ASSEMBLY AND INPUT OF MONTE CARLO PROGRAM KENO-II.
W. J. Weber. Dec 72, 48p
In German. U.S. Sales Only.

Descriptors: (*Criticality, *Computer calculations), K codes, Mathematical models, Monte carlo method.

For abstract, see NSA 28 05, number 12153.

ORNL-TM-4244/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
CALCULATED KINETICS PARAMETERS FOR THE SOUTHWESTERN EXPERIMENTAL FAST OXIDE REACTOR ASSEMBLIES I-P, II-A, AND II-C.
W. A. Rhoades. May 73, 21p
Contract W-7405-eng-26

Descriptors: (*Sefor reactor, *Reactor kinetics), Delayed neutrons, Neutron transport theory, Plutonium isotopes, Prompt neutrons, Uranium isotopes.

For abstract, see NSA 28 05, number 12079.

ORNL-TM-4255/GA PC$3.25/MF$1.45
Oak Ridge National Lab., Tenn.
CALCULATION OF MULTIPLICATION FACTOR VS TEMPERATURE FOR A MSBR LATTICE IN THE HTLTR AND COMPARISON WITH EXPERIMENT.
G. L. Ragan. Jul 73, 24p
Contract W-7405-eng-26

Descriptors: (*Molten salt reactors, *Multiplication factors), (*Breeder reactors, Multiplication factors), Comparative evaluations, Computer calculations, Htltr reactor, Reactor lattices, Simulation, Temperature dependence, X codes.

For abstract, see NSA 28 06, number 14425.

ORNL-TM-4273/GA PC$3.75/MF$1.45
Oak Ridge National Lab., Tenn.
APSAI: A COMPUTER CODE FOR PLOTTING FLUXES AND ABSORPTION DENSITIES GENERATED BY THE ANISN CODE.
S. Sahin. Jul 73, 33p
Contract W-7405-eng-26

Descriptors: (*Neutron transport theory, Computer codes), (*Gamma transport theory, Computer codes), (*Computer codes, *A codes).

For abstract, see NSA 28 06, number 14228.

RT/FI-(73)4/GA PC$4.75/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy).
STOCHASTIC KINETICS. 1. NEUTRONICS.
V. M. Jorio, and N. Pacilio. 6 Feb 73, 53p
In Italian. U.S. Sales Only.

Descriptors: (*Neutron transport theory, Reactor kinetics), (*Reactor kinetics, *Neutron density), Probability, Stochastic processes.

For abstract, see NSA 28 05, number 11794.

RT/FI-(73)6/GA PC$4.00/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy).
CALCULATION OF THE COEFFICIENT OF ANISOTROPIC DIFFUSION IN CYLINDRICAL CAVITIES AND OF THE GENERALIZED FORM XY.
V. Anton. 5 Feb 73, 38p
In Italian. U.S. Sales Only.

Descriptors: Anisotropy, Diffusion, Neutron diffusion equation, Neutron transport theory, Numerical solution.

For abstract, see NSA 28 05, number 11795.

RT/FI-(73)9/GA PC$4.00/MF$1.45
Comitato Nazionale Per l'Energia Nucleare, Rome (Italy).
ASSESSMENT OF THE RELIABILITY OF THE CNEN'S METHODS FOR THE NEUTRONIC DESIGN OF PWR'S. PART II. ANALYSIS OF (B.

AND W. LUMPED BURNABLE POISON PROGRAM) EXPERIMENTS.
M. Gaafer, F. Orestano, and F. Pistella. 22 Mar 73, 36p
U.S. Sales Only.

Descriptors: (*Pwr type reactors, *Burnable poisons), Computer codes, Control elements, Control rod worths, Design, Reactor kinetics, Reactor lattice parameters, Reliability.

For abstract, see NSA 28 06, number 14336.

SC-RR-720724/GA PC$4.00/MF$1.45
Sandia Labs., Livermore, Calif.
UPGRADING THE STEADY-STATE POWER OF THE ANNULAR CORE PULSE REACTOR.
B. F. Estes, and F. M. Morris. Dec 72, 36p

Descriptors: (*Acpr reactor, *Reactor kinetics), Fluid flow, Heat transfer, Power density, Reactivity, Reactor cores, Temperature dependence.

For abstract, see NSA 28 06, number 14482.

WAPD-TM-1098/GA PC$3.00/MF$1.45
Bettis Atomic Power Lab., Pittsburgh, PA.
COMPUTATION OF RIGOROUS ERROR BOUNDS FOR NUMERICAL SOLUTIONS OF THE NEUTRON TRANSPORT EQUATION.
N. K. Madsen. Mar 73, 20p
Contract AT-11-1-GEN-14

Descriptors: (*Neutron transport theory, *Errors), Boundary conditions, Differential equations, Neutron flux, Numerical solution.

For abstract, see NSA 28 05, number 11796.

WAPD-TM-949/GA PC$4.25/MF$1.45
Bettis Atomic Power Lab., Pittsburgh, PA.
BE27: A TWO-GROUP X-Y GEOMETRY TRANSPORT PROGRAM FOR DEEP PENETRATING HOMOGENEOUS MEDIA.
R. B. Fischer, and E. M. Gelbard. Mar 73, 43p
Contract AT-11-1-Gen-14

Descriptors: (*Computer codes, *B codes), (*Neutron transport theory, Computer codes), Cdc computers, Fortran, Geometry, Green function, Group theory, Spherical harmonics.

For abstract, see NSA 28 06, number 13978.

18M. Reactors (Non-Power)

COO-2275-1/GA PC$3.00/MF$1.45
Ohio State Univ., Columbus.
UNIVERSITY REACTOR SHARING PROGRAM. PROGRESS REPORT, 1 SEPTEMBER 1972--31 MAY 1973.
W. E. Carey, and B. K. Hajek. 7p
Contract AT(11-1)-2275

Descriptors: (*Osur reactor, *Uses), Activation analysis, Nuclear engineering, Personnel, Research programs.

For abstract, see NSA 28 06, number 14469.

18N. Snap Technology

AI-AEC-13073/GA PC$4.75/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
SCRAM CONTROLLER AND AUTOMATIC CONTROLLER 5-KWE REACTOR THERMOELECTRIC SYSTEM.
R. J. Tuttle. 25 May 73, 55p
Contract AT(04-3)-701

Descriptors: (*Snap reactors, *Reactor control systems), Digital computers, Electronic circuits, Reactor start-up, Scram, Simulation, Switches, Testing.

For abstract, see NSA 28 06, number 14831.

AI-AEC-13076(Vol.1)/GA PC$5.25/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
SELECTED COMPUTER CODES AND LIBRARIES. VOLUME I. ZIP: A TIMESHARE PROGRAM FOR SNAP REACTOR PARAMETRIC STUDIES.
H. Rood. 21 Jun 73, 62p
Contract AT(04-3)-701

Descriptors: (*Snap reactors, *Performance), (*Computer codes, *Z codes), Fortran, Heat transfer, Honeywell computers, Hydraulics, Power, Reactor kinetics, Reactor lattice parameters, Shielding.

For abstract, see NSA 28 06, number 14527.

AI-AEC-13076(Vol.4)/GA PC$8.75/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
SELECTED COMPUTER CODES AND LIBRARIES. VOLUME IV. A 28-GROUP CROSS SECTION LIBRARY FOR SNAP REACTOR ANALYSIS.
J. M. Otter. 31 May 73, 133p
Contract AT(04-3)-701

Descriptors: (*Snap reactors, *Reactor kinetics), (*Neutrons, *Cross sections), Computer codes, Data, Neutron spectra.

For abstract, see NSA 28 06, number 14528.

AI-AEC-13076(Vol.5)/GA PC$5.25/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
SELECTED COMPUTER CODES AND LIBRARIES. VOLUME V. TEMPRO: A HEAT TRANSFER-LIFETIME CODE FOR SNAP REACTOR ANALYSIS.
L. D. Felten, and E. Moody. 24 May 73, 61p
Contract AT(04-3)-701

Descriptors: (*Snap reactors, *Heat transfer), (*Computer codes, *T codes), Burnup, Fission poisons, Fuel elements, Hydrogen, Nuclear fuels, Reactivity, Reactor kinetics, Swelling, Time dependence, Uranium.

For abstract, see NSA 28 06, number 14529.

AI-AEC-13081/GA PC$11.75/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
RADIATION SHIELDING FOR ZIRCONIUM HYDRIDE REACTOR SYSTEMS.
V. Keshishian, J. V. Facha, R. J. Thomson, and F. H. Welch. 26 Jun 73, 192p
Contract AT(04-3)-701

Descriptors: (*S10 reactor, *Shielding), (*S8 reactor, Shielding), (*S2 reactor, Shielding), (*S4 reactor, Shielding), Casting, Cost, Design, Dose rates, Gamma radiation, Lithium hydrides, Neutrons, Pressing, Snap reactors, Zirconium hydrides.

For abstract, see NSA 28 06, number 14530.

AI-AEC-13085/GA PC$5.25/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
BURNABLE POISON DEPOSITION ON ZIRCONIUM HYDRIDE FUEL: PROCESS DEVELOPMENT AND EVALUATION.
R. Van Houten. 22 Jun 73, 62p
Contract AT(04-3)-701

Descriptors: (*Snap reactors, Fuel rods), (*Fuel rods, *Fabrication), (*Gadolinium oxides, *Surface coating), (*Erbium oxides, Surface coating), Burnable poisons, Coatings, Europium oxides, Neutron reflectors, Performance, Radiation effects, Reactor cores, Samarium oxides, Stability, Testing, Vapor plating, Yttrium oxides, Zirconium hydrides.

For abstract, see NSA 28 06, number 14531.

AI-AEC-13086/GA PC$3.75/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
CONTROL WORTH OF SLIDING REFLECTORS FOR ZIRCONIUM HYDRIDE REACTORS.
D. S. Bost. 30 Jun 73, 31p
Contract AT(04-3)-701

Descriptors: (*Snap reactors, Neutron reflectors), (*Neutron reflectors, *Reactivity worths), Beryllium, Control equipment, D codes, Performance, Reactor control systems, Reactor fueling, Transport theory, Two-dimensional calculations, Zirconium hydrides.

For abstract, see NSA 28 06, number 14833.

AI-AEC-13088/GA PC$5.25/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
ZIRCONIUM HYDRIDE REACTOR CORE HEAT TRANSFER STUDIES SUMMARY REPORT.
A. R. Marchese, and A. N. Gallegos. 15 Jun 73, 64p
Contract AT(04-3)-701

Descriptors: (*Snap reactors, Fuel assemblies), (*Fuel assemblies, *Heat transfer), Configuration, Fuel rods, Liquid flow, Liquid metals, Mixing, Nak cooled reactors, Spacers, Testing, Turbulent flow.

For abstract, see NSA 28 06, number 14532.

AI-AEC-13092/GA PC$3.50/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
SPACE NUCLEAR SYSTEM EXPANSION JOINTS SUMMARY REPORT.
W. D. Whitaker, and T. T. Shimazaki. 15 Jun 73, 27p NASA-CR-121209
Contract AT(04-3)-701

Descriptors: (*Snap reactors, Primary coolant circuits), (*Primary coolant circuits, *Pipe joints), Configuration, Design, Performance, Pipelines, Thermal expansion.

For abstract, see NSA 28 06, number 14533.

AI-AEC-13095/GA PC$4.00/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
THERMOELECTRIC PUMP PERFORMANCE ANALYSIS COMPUTER CODE.
J. L. Johnson. 11 Jun 73, 24p NASA-CR-121204
Contract AT(04-3)-701

Descriptors: (*Snap reactors, Electromagnetic pumps), (*Electromagnetic pumps, *Design), (*Computer codes, *D codes), P codes, Performance, Specifications.

For abstract, see NSA 28 06, number 14534.

AI-AEC-13098/GA PC$5.45/MF$1.45
Atomics International Div., Canoga Park, Calif. (Usa).
SYSTEM STATISTICAL RELIABILITY MODEL AND ANALYSIS.
V. S. Lekach, and H. Rood. 8 Jun 73, 53p NASA-CR-121205
Contract AT(04-3)-701

Descriptors: (*Snap reactors, *Performance), (*Computer codes, Snap reactors), Reactor kinetics, Reliability, Simulation.

For abstract, see NSA 28 06, number 14535.

CONF-730811-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
CURIUM-244 HEAT SOURCE FABRICATION.
E. Lamb, D. G. Albertson, and P. Brown. 1973, 11p
Contract W-7405-eng-26

Descriptors: (*Curium 244, *Thermoelectric generators), (*Radioisotope heat sources, *Fabrication), Hot pressing.

For abstract, see NSA 28 06, number 12976.

DP-1192-2/GA PC$3.25/MF$1.45
Du Pont de Nemours (E.I.) and CO., Aiken, S. C. Savannah River Lab.
SAVANNAH RIVER LABORATORY ISOTOPIC POWER AND HEAT SOURCES. PART II. CURIUM-244 AND PLUTONIUM-238. QUARTERLY PROGRESS REPORT, OCTOBER--DECEMBER 1968.
H. S. Hilborn. Mar 69, 23p
Contract AT(07-2)-1

Descriptors: (*Radioisotope heat sources, *Research programs), (*Thermoelectric generators, Radioisotope heat sources), (*Curium 244, *Isotope production), (*Plutonium 238, Isotope production), Gamma spectroscopy.

For abstract, see NSA 28 06, number 12977.

DP-1332/GA PC$4.00/MF$1.45
Du Pont de Nemours (E.I.) and CO., Aiken, S. C. Savannah River Lab.
SAVANNAH RIVER LABORATORY COBALT-60 POWER AND HEAT SOURCES. QUARTERLY PROGRESS REPORT, JANUARY--MARCH 1973.
C. L. Angerman. May 73, 16p
Contract AT(07-2)-1

Descriptors: (*Thermoelectric generators, Radioisotope heat sources), (*Radioisotope heat sources, *Research programs), (*Cobalt 60, Radioisotope heat sources), (*Capsules, *Performance testing), Inconel alloys, Iridium, Platinum.

For abstract, see NSA 28 06, number 12978.

LA-UR-73-741/GA PC$4.75/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ATMOSPHERE-ENTRY BEHAVIOR OF A MODULAR, DISK SHAPED, ISOTOPE HEAT SOURCE.
J. W. Vorreiter, J. H. Burns, W. C. Pitts, and H. A. Stine. 1973, 52p CONF-730811-7
Contract W-7405-eng-36

Descriptors: (*Radioisotope heat sources, *Reentry), Impact tests, Safety, Space flight.

For abstract, see NSA 28 06, number 12979.

N-73-12694/GA PC$4.00/MF$1.45
United Aircraft Corp., East Hartford, Conn. Research Labs.
DEVELOPMENT OF A MODEL AND TEST EQUIPMENT FOR COLD FLOW TESTS AT 500 ATM OF SMALL NUCLEAR LIGHT BULB CONFIGURATIONS.
J. F. Jaminet. Sep 72, 27p NASA-CR-129501, L-910900-14
Contract SNPC-70

Descriptors: (*Light bulb reactors, *Testing), Argon, Configuration, Design, Flow rate, Mockup, Reactor operation, Water.

For abstract, see NSA 28 06, number 14538.

N-73-12697/GA PC$5.45/MF$1.45
United Aircraft Corp., East Hartford, Conn. Research Labs.
ANALYTICAL DESIGN AND PERFORMANCE STUDIES OF NUCLEAR FURNACE TESTS OF SMALL NUCLEAR LIGHT BULB MODELS.
T. S. Latham, and R. J. Rodgers. Sep 72, 87p
NASA-CR-129296, L-910900-17
Contract SNPC-70

Descriptors: (*Light bulb reactors, *Design), Heat transfer, Performance testing, Reactor cells.

For abstract, see NSA 28 06, number 14539.

NAA-SR-Memo-10536/GA PC$3.00/MF$1.45
Atomics International, Canoga Park, Calif.
ATOMICS INTERNATIONAL CONTRIBUTION TO 19TH HIGH TEMPERATURE FUELS COMMITTEE. PRELIMINARY INFORMATION, SECTION II.
15 Oct 64, 19p

Descriptors: (*Zirconium hydrides, *Mechanical properties), (*Uranium alloys, Mechanical properties), (*Snap reactors, Mechanical properties), (*Nuclear fuels, Mechanical properties), Carbon additions, Creep, Density, Diffusion, Hydrogen, Physical radiation effects, Porosity, Quartz, Swelling.

For abstract, see NSA 28 05, number 11239.

NAA-SR-Memo-6924/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 REACTOR AND SHIELD SPECIFICATIONS FOR USE IN SNAP 8 SPACECRAFT DESIGN STUDIES.
8 Dec 61, 37p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Design), Reactor components, Reactor cores, Shielding, Snap reactors, Space vehicles, Specifications.

For abstract, see NSA 28 04, number 10104.

NAA-SR-Memo-7376/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 REACTOR DEVELOPMENT PLAN.
C. E. Johnson. 9 Jul 62, 55p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Design), Comparative evaluations, Diagrams, Nak cooled reactors, Rankine cycle, Space propulsion reactors, S10 reactor, S2 reactor.

For abstract, see NSA 28 04, number 10105.

NAA-SR-Memo-8215(Pt.4)/GA PC$5.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP (SYSTEMS FOR NUCLEAR AUXILIARY POWER) TECHNICAL BRIEFS, PART 4, SNAP 8.
C. E. Johnson, L. M. Maki, D. G. Mason, G. W. Meyers, and M. G. Coombs. 15 Mar 63, 72p
Contract AT(11-1)-GEN-8

Descriptors: (*S8er reactor, *Design), Control equipment, Electric power, Fuel elements, Operation, Performance testing, Planning, Reactor components, Shielding, Space flight.

For abstract, see NSA 28 06, number 14562.

NAA-SR-Memo-8679/GA PC$6.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A REACTOR DESIGN SUMMARY.
J. Susnir, and T. Harman. 5 Dec 63, 86p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Design), Fuel elements, Reactor control systems, Reactor cores, Shielding, Snap reactors.

For abstract, see NSA 28 04, number 10106.

NAA-SR-10022(Add.1)(Rev.)/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
FINAL SNAPSHOT SAFEGUARDS REPORT. ADDENDUM I.
R. S. Hart. 20 Mar 65, 25p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Reactor safety), Contamination, Environment, Failures, Fallout, Reactivity, Reactor operation, Reactor shutdown, Reentry, Snap reactors, Space flight.

For abstract, see NSA 28 04, number 10081.

NAA-SR-10022(Rev.)/GA PC$23.75/MF$1.45
Lockheed Missiles and Space CO., Palo Alto, Calif. Atomics International, Canoga Park, Calif.
FINAL SNAPSHOT SAFEGUARDS REPORT.
R. S. Hart, and W. T. Harper. 20 Mar 65, 432p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Radiation hazards), Launching, Orbits, Reactor safety, Reentry, Safety, Space flight, Testing.

For abstract, see NSA 28 06, number 14554.

NAA-SR-10027/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
OBSERVATIONS ON THE PROPERTIES AND BEHAVIOR OF EARLY SNAP 8 HYDROGEN PERMEATION BARRIERS.
H. W. Carpenter. 15 Apr 65, 35p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Fuel elements), Ceramics, Coatings, Hastelloys, Hydride moderators, Hydrogen, Performance, Permeability, Porosity, Snap reactors.

For abstract, see NSA 28 04, number 10082.

NAA-SR-10174/GA PC$3.00/MF$1.45
Atomics International, Canoga Park, Calif.
IDENTIFICATION OF THE MODIFIER IN SNAP FUEL.
H. Taketani, L. Silverman, and W. L. Korst. 1 Feb 65, 20p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, *Dispersion nuclear fuels), (*Zirconium hydrides, *Fabrication), (*Uranium hydrides, Fabrication), Additives, Cracking, Grain refinement, Zirconium carbides.

For abstract, see NSA 28 04, number 10083.

NAA-SR-10245/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
INTERIM REPORT ON THE SNAP CRITICAL ASSEMBLY 4A (SCA-4A) EXPERIMENTAL RESULTS.
D. W. Clifford. 20 Mar 65, 45p
Contract AT(11-1)-GEN-8

Descriptors: (*Zero power reactors, *Reactor kinetics), (*S10 reactor, *Mockup), (*S2 reactor, Mockup), Beryllium, Neutron reflectors, Reactivity worths, Snap reactors.

For abstract, see NSA 28 05, number 12118.

NAA-SR-10490/GA PC$5.00/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP REACTOR IMPROVEMENT PROGRAM. PROGRESS REPORT, JULY--SEPTEMBER 1964.
R. J. Gimera, and J. Susnir. 31 Dec 64, 59p

Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Design), (*S2 reactor, *Fuel elements), Environment, Fabrication, Shielding, Space propulsion reactors, Testing.

For abstract, see NSA 28 04, number 10084.

NAA-SR-10500/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
TESTING S8DRM-1 FUEL ELEMENTS (INTERIM REPORT).
W. D. Fuller, and J. D. Whitlock. 30 Jun 65, 34p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Fuel elements), (*S8dr reactor, Fuel elements), (*S8er reactor, Fuel elements), Hydrogen, Leaks, Mockup, Performance testing, Space propulsion reactors.

For abstract, see NSA 28 04, number 10085.

NAA-SR-10515/GA PC$3.50/MF$1.45
Atomics International, Canoga Park, Calif.
FISSION GAS RELEASE FROM LIGHTLY IRRADIATED SNAP 8 FUEL MATERIALS.
A. H. Willis, and A. J. Moses. 15 Sep 65, 30p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Dispersion nuclear fuels), (*Zirconium hydrides, *Swelling), (*Uranium hydrides, Swelling), Burnup, Fission products, Gases, Irradiation, Phase diagrams, Snap reactors, Stability.

For abstract, see NSA 28 04, number 10086.

NAA-SR-10516/GA PC$3.00/MF$1.45
Atomics International, Canoga Park, Calif.
DIFFUSION COEFFICIENT OF HYDROGEN IN DELTA-PHASE ZIRCONIUM HYDRIDE.
S. D. Harkness, and W. A. Young. 22 Feb 65, 18p
Contract AT(11-1)-GEN-8

Descriptors: (*Hydrogen, *Diffusion), (*Snap reactors, *Nuclear fuels), (*Zirconium hydrides, Diffusion), Chemisorption, High temperature, Uranium alloys, Very high temperature, Zirconium base alloys.

For abstract, see NSA 28 05, number 11136.

NAA-SR-10859/GA PC$5.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 NUCLEAR SYSTEMS FOR UNMANNED AND MANNED APPLICATIONS.
D. G. Mason. 15 May 65, 71p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Design), Dose rates, Gamma radiation, Neutrons, Performance, Reactor operation, Reliability, Shielding, Snap reactors, Space flight.

For abstract, see NSA 28 04, number 10087.

NAA-SR-10903/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 EXPERIMENTAL REACTOR OPERATIONS AND TEST RESULTS.
L. M. Fead, L. D. Felten, and V. L. Rooney. 28 Jun 65, 42p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Performance testing), Hydrogen, Losses, Poisoning, Reactivity, Reactor operation, Space propulsion reactors.

For abstract, see NSA 28 04, number 10088.

NAA-SR-11092/GA PC$8.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 PROGRESS REPORT, FEBRUARY--APRIL 1965.
C. E. Johnson. 15 Jun 65, 131p
Contract AT(11-1)-GEN-8

Descriptors: (*S8er reactor, *Research programs), (*S8dr reactor, *Performance testing), (*S8 reactor, Research programs), Design, Fuel elements, Reactor components.

For abstract, see NSA 28 04, number 10089.

NAA-SR-11096/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP (SYSTEMS FOR NUCLEAR AUXILIARY POWER) GENERAL SUPPORTING TECHNOLOGY, FEBRUARY--APRIL 1965.
L. S. Mims. 30 Jun 65, 36p
Contract AT(11-1)-GEN-8

Descriptors: (*Snap reactors, *Research programs), Gamma radiation, Neutrons, Physical radiation effects, Reactor kinetics, Shielding, Zero power reactors.

For abstract, see NSA 28 04, number 10090.

NAA-SR-11164/GA PC$6.25/MF$1.45
Atomics International, Canoga Park, Calif.
HYDROGEN IN SNAP SYSTEMS.
D. F. Atkins. 30 Apr 65, 82p
Contract AT(11-1)-Gen-8

Descriptors: (*Hydrogen, *Snap reactors), Nuclear fuels, Performance, Performance testing, Potassium, Reactor components, Reactor materials, Sodium, Solubility, S10 reactor, S8 reactor, Uranium hydrides, Zirconium hydrides.

For abstract, see NSA 28 06, number 14555.

NAA-SR-11206(Add.)/GA PC$5.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A FS-3 OPERATIONS.
R. E. Bedford, and J. P. Beall. 30 Jun 66, 72p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Performance testing), Pumps, Reactor operation, Reliability.

For abstract, see NSA 28 06, number 14556.

NAA-SR-11304/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
POSTIRRADIATION EXAMINATION OF SNAP 8 CLADDING MATERIAL IRRADIATION EXPERIMENT NAA 77-4.
C. J. Engberg, and K. J. Miller. 15 Sep 65, 32p
Contract AT(11-1)-GEN-8

Descriptors: (*Fuel cans, *Physical radiation effects), (*Capsules, Physical radiation effects), (*Hastelloys, Physical radiation effects), (*Snap reactors, Fuel cans), Ceramics, Cooling, Ductility, Failures, Metallography, Stainless steel-304, Thickness, Uranium dioxide, Very high temperature.

For abstract, see NSA 28 05, number 11321.

NAA-SR-11316/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
EFFECTS OF PROCESSING AND OPERATING PARAMETERS ON THE CREEP PROPERTIES OF SNAP REACTOR FUEL ELEMENT CLADDING.
G. E. Culley, and J. T. Berling. 15 Oct 65, 32p
Contract AT(11-1)-GEN-8

Descriptors: (*Hastelloys, *Creep), (*Snap reactors, *Fuel cans), Coatings, Grain size, Liquid metals, Potassium alloys, Sodium alloys, Stresses, Tubes, Uranium alloys, Very high temperature, Zirconium hydrides.

For abstract, see NSA 28 05, number 11235.

NAA-SR-11457/GA PC$4.50/MF$1.45
Atomics International, Canoga Park, Calif.
IRRADIATION STABILITY OF SCB-1 COATED HASTELLOY N. SNAP 8 FUEL CLADDING EXPERIMENT NAA 77-1.
C. J. Engberg, K. J. Miller, and R. C. Courtright. 15 Oct 65, 50p
Contract AT(11-1)-Gen-8

Descriptors: (*Hastelloys, *Physical radiation effects), (*Protective coatings, Physical radiation effects), (*S8er reactor, *Fuel elements), Bentonite, Deposits, Fast neutrons, Hydrogen, Neutron beams, Oxides, Permeability, Samarium oxides.

For abstract, see NSA 28 05, number 11322.

NAA-SR-11490/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP REACTOR IMPROVEMENT PROGRAM. PROGRESS REPORT, APRIL--JUNE 1965.
R. J. Gimera, and J. Susnir. 31 Aug 65, 31p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Fuel rods), (*S2 reactor, *Reactor operation), Elongation, Environment, Mockup, Plates, Reliability, Testing.

For abstract, see NSA 28 06, number 14557.

NAA-SR-11496/GA PC$3.50/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP (SYSTEMS FOR NUCLEAR AUXILIARY POWER) GENERAL SUPPORTING TECHNOLOGY, MAY--JULY 1965.
L. S. Mims. 30 Sep 65, 29p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Shielding), Heat transfer, Mass transfer, Nak cooled reactors, Radiation effects, Reactor cores, Reactor kinetics.

For abstract, see NSA 28 05, number 12119.

NAA-SR-11547/GA PC$5.50/MF$1.45
Atomics International, Canoga Park, Calif.
ENVIRONMENTAL TESTING SNAP 10A FUEL ELEMENTS.
J. L. Isaacs. 25 Dec 65, 69p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Fuel elements), Mechanical tests, Performance testing, Thermal cycling.

For abstract, see NSA 28 06, number 14558.

NAA-SR-11584/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
ANALYSIS OF SNAPTRAN-3 DESTRUCTIVE EXPERIMENT DEBRIS.
G. E. Culley. 15 Dec 65, 36p
Contract AT(11-1)-GEN-8

Descriptors: (*Snaptran reactors, *Destructive testing), Failures, Fuels, Hydrogen, Melting, Reactor cores, Reactor safety, Space propulsion reactors, Transients.

For abstract, see NSA 28 04, number 10091.

NAA-SR-11637/GA PC$5.75/MF$1.45
Atomics International, Canoga Park, Calif.
NON-NUCLEAR PERFORMANCE TESTING SNAP 8 EXPERIMENTAL REACTOR FUEL ELEMENTS FINAL REPORT.
A. J. Fitzgerald, and F. A. La Scalla. 25 Mar 66, 73p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Fuel assemblies), Design, Destructive testing, Performance testing.

For abstract, see NSA 28 05, number 12120.

NAA-SR-11685(Vol.2)/GA PC$9.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP SYSTEMS CAPABILITIES. VOLUME 2. STUDY INTRODUCTION, REACTORS, SHIELDING.
1 Dec 65, 149p
Contract AT(11-1)-GEN-8

Descriptors: (*Snap reactors, *Research programs), Design, Shielding.

For abstract, see NSA 28 04, number 10092.

NAA-SR-11691(Vol.1)/GA PC$5.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP SYSTEMS IMPROVEMENT PROGRAM. VOLUME I. PROGRESS REPORT, JULY--SEPTEMBER 1965.
15 Nov 65, 66p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, *Rankine cycle), Bearings, Corrosion, Mercury, Performance, Pumps, Reactor components, Testing.

For abstract, see NSA 28 04, number 10093.

NAA-SR-11691(Vol.2)/GA PC$6.00/MF$1.45
Trw Equipment Labs., Cleveland, Ohio.
SNAP SYSTEMS IMPROVEMENT PROGRAM: MERCURY RANKINE PROGRAM. VOLUME II. PROGRESS REPORT, JULY--SEPTEMBER 1965.
27 Dec 65, 80p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, *Research programs), Energy conversion, Mercury, Rankine cycle, Reactor components.

For abstract, see NSA 28 04, number 10094.

NAA-SR-11755(Vol.2)/GA PC$9.50/MF$1.45
Trw Equipment Labs., Cleveland, Ohio.
SNAP SYSTEMS IMPROVEMENT PROGRAM: MERCURY RANKINE PROGRAM. VOLUME II. PROGRESS REPORT, OCTOBER--DECEMBER 1965.
15 Mar 66, 150p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, *Research programs), Energy conversion, Mercury, Rankine cycle, Reactor components.

For abstract, see NSA 28 04, number 10095.

NAA-SR-11758/GA PC$8.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 PROGRESS REPORT, OCTOBER 1965--JANUARY 1966.
D. G. Mason. 8 Apr 66, 129p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Performance), (*S8er reactor, *Fuel elements), (*S8dr reactor, *Reactor components), Design, Reactor operation, Research programs, Snap reactors.

For abstract, see NSA 28 04, number 10096.

NAA-SR-11759/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT, SNAP AEROSPACE NUCLEAR SAFETY PROGRAM, OCTOBER--DECEMBER 1965.
R. L. Detterman. 15 Feb 66, 51p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, *Reactor safety), (*Snaptran reactors, *Testing), Ablation, Burnup, Calorimeters, Nuclear fuels, Reentry, Scram, S10 reactor, S8 reactor, Wind tunnels.

For abstract, see NSA 28 04, number 10097.

NAA-SR-11760(Vol.2)/GA PC$5.75/MF$1.45
Radio Corp. Of America, Harrison, N. J.
ADVANCED THERMOELECTRIC DEVELOPMENT PROGRAM. VOLUME II. PROGRESS REPORT, NOVEMBER 1965--JANUARY 1966.
31 Mar 66, 72p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, Thermoelectric generators), (*Thermoelectric generators, *Research programs), Design, Performance testing.

For abstract, see NSA 28 04, number 10098.

NAA-SR-11886(Vol.1)/GA PC$5.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP SYSTEMS IMPROVEMENT PROGRAM: MERCURY RANKINE PROGRAM. PROGRESS REPORT, JANUARY--MARCH 1966.
15 May 66, 61p
Contract AT(11-1)-GEN-8

Descriptors: (*Snap reactors, *Research programs), Energy conversion, Mercury, Rankine cycle.

For abstract, see NSA 28 05, number 12121.

NAA-SR-11886(Vol.2)/GA PC$9.00/MF$1.45
Trw Equipment Labs., Cleveland, Ohio.
SNAP SYSTEMS IMPROVEMENT PROGRAM: MERCURY RANKINE PROGRAM. VOLUME II. PROGRESS REPORT, JANUARY--MARCH 1966.
30 May 66, 137p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, *Research programs), Energy conversion, Mercury, Rankine cycle, Reactor components.

For abstract, see NSA 28 04, number 10099.

NAA-SR-11898/GA PC$10.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 PROGRESS REPORT, FEBRUARY--APRIL 1966.
D. G. Mason. 15 Jul 66, 174p
Contract AT(11-1)-Gen-8

Descriptors: (*S8er reactor, *Fuel elements), (*S8 reactor, *Research programs), Design, Irradiation, Reactor components.

For abstract, see NSA 28 05, number 12122.

NAA-SR-11911/GA PC$5.25/MF$1.45
Atomics International, Canoga Park, Calif.
STATIC CONTROL OF SNAP REACTORS.
K. R. Birney, and D. J. McGoff. 30 May 66, 63p
Contract AT(11-1)-GEN-8

Descriptors: (*Snap reactors, *Reactor control systems), Reliability, Temperature dependence.

For abstract, see NSA 28 05, number 12168.

NAA-SR-11955/GA PC$7.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A POWER CONVERSION SYSTEM DESIGN AND TEST.
S. R. Rocklin, J. L. Johnson, L. L. Lepisto, M. Mike, and R. M. Willard. 30 Jun 66, 114p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Thermoelectric generators), Design, Performance testing, Snap reactors.

For abstract, see NSA 28 04, number 10100.

NAA-SR-11956/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
END-OF-LIFE SHUTDOWN STUDIES. INTERIM REPORT.
K. E. Moore. 30 Jun 66, 25p
Contract AT(11-1)-GEN-8

Descriptors: (*Snap reactors, *Reactor shutdown), (*Zirconium hydrides, *Dissociation), Pressure dependence, Solid fuels, Tritium.

For abstract, see NSA 28 04, number 10101.

NAA-SR-11960/GA PC$5.75/MF$1.45
Atomics International, Canoga Park, Calif.
MEASUREMENT OF THERMAL PROPERTIES OF SNAP FUEL MATERIALS.
J. B. Vetrano, C. J. Ambrose, G. E. Culley, F. A. Finch, and M. M. Nakata. 20 Jun 67, 72p
Contract AT(04-3)-701

Descriptors: (*Zirconium hydrides, *Thermodynamic properties), (*Uranium alloys, Thermodynamic properties), (*Zirconium alloys, Thermodynamic properties), Density, Distribution, Hydrogen, Specific heat, Thermal conductivity.

For abstract, see NSA 28 05, number 11236.

NAA-SR-11962/GA PC$5.25/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP GENERAL SUPPORTING TECHNOLOGY, FEBRUARY--APRIL 1966.
L. S. Mims. 15 Jun 66, 62p
Contract AT(11-1)-GEN-8

Descriptors: (*Snap reactors, *Research programs), Cross sections, Data, Heat transfer, Neutron reactions, Shielding.

For abstract, see NSA 28 05, number 12123.

NAA-SR-11964/GA PC$5.25/MF$1.45
Atomics International, Canoga Park, Calif.
IRRADIATION STABILITY OF SCB-1 COATED HASTELLOY N SNAP 8 FUEL CLADDING EXPERIMENTS NAA 77-2 AND NAA 77-3.
C. J. Engberg, K. J. Miller, and R. C. Courtright.
30 Jun 66, 63p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Fuel cans), (*Inor-8, *Physical radiation effects), Ceramics, Coatings, Permeability.

For abstract, see NSA 28 06, number 14559.

NAA-SR-12020/GA PC$7.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP REACTOR IMPROVEMENT PROGRAM. PROGRESS REPORT, APRIL--JUNE 1966.
L. M. Maki. 15 Aug 66, 104p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Performance), Fuel assemblies, L codes, Nak cooled reactors, Reactor components, Reactor cores, Relays, Shielding, Switches, Transistors.

For abstract, see NSA 28 05, number 12124.

NAA-SR-12027/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
END-OF-LIFE SHUTDOWN FEASIBILITY STUDIES.
W. A. Young, and W. H. Graham. 30 Jun 67, 44p
Contract AT(04-3)-701

Descriptors: (*S8 reactor, *Reactor shutdown), Fuel rods, Helium 3, Inor-8, Tritium.

For abstract, see NSA 28 06, number 14560.

NAA-SR-12029/GA PC$13.00/MF$1.45
Atomics International, Canoga Park, Calif.
POSTOPERATION EVALUATION OF FUEL ELEMENTS FROM THE SNAP 8 EXPERIMENTAL REACTOR.
P. S. Olson, K. J. Miller, and E. J. Donovan. 15 Sep 67, 218p
Contract AT(04-3)-701

Descriptors: (*S8er reactor, Fuel elements), (*Fuel elements, *Performance testing), Cracks, Fuel cans, Inor-8, Inspection, Nak cooled reactors, Phase transformations, Reactor cores, Swelling.

For abstract, see NSA 28 04, number 10102.

NAA-SR-12033/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
ANNEALING STUDIES ON IRRADIATED SNAP FUEL.
F. C. Schrag. 26 Jun 67, 38p
Contract AT(04-3)-701

Descriptors: (*Uranium alloys, *Physical radiation effects), (*Zirconium hydrides, Physical radiation effects), (*S8er reactor, *Fuel elements), Annealing, Burnup, Cracks, Swelling, Temperature dependence, Very high temperature.

For abstract, see NSA 28 05, number 11323.

NAA-SR-12284/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
EMPIRICAL STUDY OF SNAP REACTOR FUEL IRRADIATION BEHAVIOR.
K. R. Birney. 10 Aug 67, 52p
Contract AT(04-3)-701

Descriptors: (*Zirconium hydrides, *Physical radiation effects), (*Uranium alloys, Physical radiation effects), (*S8dr reactor, *Nuclear fuels), Burnup, Carbon additions, High temperature, Hydrogen, Neutron beams, Phase diagrams, Swelling, Time dependence, Zirconium.

For abstract, see NSA 28 05, number 11324.

NAA-SR-12374/GA PC$13.00/MF$1.45
Atomics International, Canoga Park, Calif.
REACTOR POWER PLANTS FOR LUNAR BASE APPLICATION.
J. D. Gylfe, J. H. Van Osdol, V. Keshishian, and R. E. Bedford. 30 Jun 67, 219p
Contract AT(04-3)-701

Descriptors: (*S8 reactor, *Design), (*Space power reactors, Design), Biological shielding, Moon, Thermoelectric generators.

For abstract, see NSA 28 06, number 14561.

NAA-SR-12378/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP REACTOR IMPROVEMENT PROGRAM. PROGRESS REPORT, JANUARY--MARCH 1967.
L. M. Maki. 19 May 67, 51p
Contract AT(11-1)-GEN-8

Descriptors: (*Snap reactors, *Research programs), Fuel elements, Reactor components, Reactor kinetics.

For abstract, see NSA 28 04, number 10103.

NAA-SR-12607/GA PC$5.25/MF$1.45
Atomics International, Canoga Park, Calif.
THERMOPHYSICAL PROPERTIES OF UNIRRADIATED SNAP FUELS.
W. A. Young, C. C. Weeks, M. M. Nakata, and C. A. Smith. 23 Feb 68, 62p
Contract AT(04-3)-701

Descriptors: (*Zirconium base alloys, *Thermodynamic properties), (*Uranium alloys, Thermodynamic properties), (*Hydrides, Thermodynamic properties), (*Snap reactors, *Nuclear fuels), Enthalpy, High temperature, Medium temperature, Temperature dependence, Thermal conductivity, Thermal diffusivity, Very high temperature, Zirconium hydrides.

For abstract, see NSA 28 05, number 11238.

NAA-SR-5413/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
COMPATIBILITY OF SNAP FUEL AND CLAD MATERIALS.
J. K. Balkwill. 15 Oct 60, 31p
Contract AT(11-1)-GEN-8

Descriptors: (*Uranium alloys, *Compatibility), (*Zirconium hydrides, Compatibility), (*Fuel cans, Compatibility), (*Snap reactors, *Fuel elements), Beryllium, Copper, Diffusion, Gold, Hastelloy b, Inconel alloys, Molybdenum, Nickel, Pressure dependence, Protective coatings, Stainless steel-347, Stainless steels, Very high temperature.

For abstract, see NSA 28 05, number 11135.

NAA-SR-6022/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 REACTOR DEVELOPMENT. BIMONTHLY PROGRESS REPORT, OCTOBER--NOVEMBER 1960.
C. E. Johnson. 15 Mar 61, 22p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Research programs), Corrosion, Hydrodynamics, Mockup, Reactor components, Reactor control systems, Reactor cores, Reactor kinetics, Reactor safety, Reactor stability, Shielding, Snap reactors.

For abstract, see NSA 28 04, number 10039.

NAA-SR-6287/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 REACTOR PRELIMINARY DESIGN SUMMARY.
H. Rosenberg. 15 Jun 61, 43p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Design), Fuels, Heat transfer, Performance, Reactor control systems, Reactor safety, Reactor start-up, Shielding.

For abstract, see NSA 28 05, number 12075.

NAA-SR-6293/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT SNAP 8 REACTOR DEVELOPMENT, DECEMBER 1960--MARCH 1961.
C. E. Johnson. 15 Aug 61, 42p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Design), Diagrams, Fuels, Nak cooled reactors, Reactor start-up.

For abstract, see NSA 28 05, number 12112.

NAA-SR-6294/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT SNAP 10A NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT, DECEMBER 1960--MARCH 1961.
A. W. Thiele. 15 Jun 61, 31p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Research programs), Design, Fabrication, Heat transfer, Reactor safety, Shielding, Snap reactors, Space flight, Testing, Thermoelectric generators.

For abstract, see NSA 28 04, number 10040.

NAA-SR-6328(Vol.1)/GA PC$12.00/MF$1.45
Trw Equipment Labs., Cleveland, Ohio.
MERCURY RANKINE PROGRAM (SNAP 2). DEVELOPMENT OF LIQUID-MERCURY-LUBRICATED BEARINGS. VOLUME I. ANALYTICAL DESIGN APPROACH AND STATUS OF BEARING SYSTEMS (WITH APPENDIXES).
O. Decker. 196p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, Bearings), (*Bearings, *Configuration), Films, Laminar flow, Lubrication, Mercury, Rankine cycle, Research programs, Snap reactors, Testing, Turbulent flow.

For abstract, see NSA 28 04, number 10041.

NAA-SR-6328(Vol.2)/GA PC$5.00/MF$1.45
Trw Equipment Labs., Cleveland, Ohio.
MERCURY RANKINE PROGRAM (SNAP 2). DEVELOPMENT OF LIQUID-MERCURY-LUBRICATED BEARINGS. VOLUME II. PLAIN BEARING EXPERIMENTAL RESULTS.
O. Decker. (nd). 60p TRW-ER-6041(Vol.2)
Contract AT(11-1)-GEN-8

Descriptors: (*S2 reactor, *Journal bearings), Cavitation, Design, Erosion, Instability, Lubrication, Mercury, Performance testing.

For abstract, see NSA 28 06, number 14540.

NAA-SR-6561/GA PC$5.50/MF$1.45
Atomics International, Canoga Park, Calif.
THERMAL DESIGN OF SNAP REACTORS.
P. D. Cohn. 1 Feb 62, 66p
Contract AT(11-1)-GEN-8

Descriptors: Design, Fuel channels, Heat transfer, Reactor cores, Snap reactors, Thermal analysis.

For abstract, see NSA 28 04, number 10042.

NAA-SR-6691/GA PC$5.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 2 NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT PROGRESS REPORT, APRIL--JUNE 1961.
M. Shackelford. 15 Oct 61, 71p
Contract AT(11-1)-GEN-8

Descriptors: (*S2 reactor, *Research programs), Design, Reactor components, Reactor instrumentation.

For abstract, see NSA 28 06, number 14541.

NAA-SR-6692/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP 8 REACTOR DEVELOPMENT, APRIL--JUNE 1961.
1 Dec 61, 44p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Research programs), (*S8er reactor, Research programs), Design, Fuel elements, Reactor cores.

For abstract, see NSA 28 06, number 14542.

NAA-SR-6693/GA PC$5.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT. PROGRESS REPORT, APRIL--JUNE 1961.
15 Nov 61, 74p
Contract AT(11-1)-GEN-8

Descriptors: (*S10fs-1 reactor, *Research programs), (*S10fs-3 reactor, Research programs), (*S10fs-4 reactor, Research programs), (*S10 reactor, Research programs), Performance testing, Thermoelectric generators.

For abstract, see NSA 28 04, number 10043.

NAA-SR-6694/GA PC$3.00/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 2/10A REACTOR PROGRESS REPORT, APRIL--JUNE 1961.
W. M. Haussler. 1 Dec 61, 20p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, *Research programs), (*S2ds reactor, *Testing), (*S10 reactor, Research programs), Design, Heat transfer, Reactor safety, Reprocessing, Shielding, Snap reactors.

For abstract, see NSA 28 04, number 10044.

NAA-SR-6735(Add.1)/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
PRELIMINARY DESIGN OF A 150 KW SNAP REACTOR.
15 May 62, 39p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Design), Alternators, Comparative evaluations, Electric power, Performance, Pumps, Reactor components, Reactor safety, Testing.

For abstract, see NSA 28 05, number 12113.

NAA-SR-6791/GA PC$5.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 2 NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT. PROGRESS REPORT, JULY--SEPTEMBER 1961.
M. Shackelford. 1 Feb 62, 74p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, *Design), Fabrication, Radiators, Reactor components, Reactor operation, Testing.

For abstract, see NSA 28 05, number 12114.

NAA-SR-6792/GA PC$8.00/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP 8 REACTOR DEVELOPMENT, JULY--SEPTEMBER 1961.
15 May 62, 118p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Design), (*S8er reactor, *Fabrication), Fuel assemblies, Neutron reflectors, Rankine cycle, Reactor cores, Shielding.

For abstract, see NSA 28 05, number 12115.

NAA-SR-6794/GA PC$5.00/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT SNAP 2/10 REACTOR, JULY--SEPTEMBER 1961.
W. M. Haussler. 15 Feb 62, 56p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, *Fuel elements), (*S10 reactor, Fuel elements), Design, Leaks, Reactivity, Reactor components, Reactor operation, Shields, Underwater.

For abstract, see NSA 28 05, number 12116.

NAA-SR-6958/GA PC$6.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 EXPERIMENTAL REACTOR (S8ER) FINAL SAFEGUARDS SUMMARY REPORT.
A. R. Piccot. 28 Feb 62, 87p

Descriptors: (*S8er reactor, *Reactor safety), Design, Reactor control systems, Reactor sites, Testing.

For abstract, see NSA 28 05, number 12145.

NAA-SR-6991/GA PC$6.00/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 2 NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT. PROGRESS REPORT, OCTOBER--DECEMBER 1961.
M. Shackelford. 1 May 62, 78p
Contract AT(11-1)-GEN-8

Descriptors: (*S2 reactor, *Research programs), Alternators, Design, Diagrams, Pipes, Pumps, Radiators, Reactor operation, Seals, Snap reactors.

For abstract, see NSA 28 04, number 10045.

NAA-SR-6992/GA PC$6.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 REACTOR DEVELOPMENT. PROGRESS REPORT, OCTOBER--DECEMBER 1961.
15 Aug 62, 85p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Research programs), (*S8er reactor, *Reactor components), Electronic equipment, Fuel elements, Reactor control systems, Shielding, Snap reactors, Telemetry.

For abstract, see NSA 28 04, number 10046.

NAA-SR-6993/GA PC$8.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT. PROGRESS REPORT, OCTOBER--DECEMBER 1961.
26 Mar 62, 122p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Research programs), Diagrams, Pumps, Shielding, Snap reactors, Space flight, Specifications, Testing, Thermoelectric generators.

For abstract, see NSA 28 04, number 10047.

NAA-SR-6994/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT SNAP 2/10 REACTOR, OCTOBER--DECEMBER 1961.
W. M. Haussler. 30 Jun 62, 53p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Design), (*S2 reactor, *Reactor operation), Fabrication, Fuel assemblies, Reactor components, Reactor kinetics, Reactor safety, Shielding, Testing.

For abstract, see NSA 28 05, number 12117.

NAA-SR-6996/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP SUPPORTING R AND D, OCTOBER--NOVEMBER 1961.
W. J. Roberts. 15 Feb 62, 22p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, *Research programs), (*S8 reactor, Research programs), (*S10 reactor, Research programs), Computer codes, Design, Efficiency, Fabrication, Performance, Power, Reactor cores, Reactor kinetics, Reentry, Shielding, Snap reactors, Space flight, Thermionic conversion.

For abstract, see NSA 28 04, number 10048.

NAA-SR-7021/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
DESIGN, ANALYSIS, AND FABRICATION OF THERMOELECTRIC MODULES FOR SNAP 10A.
P. P. King, and G. W. Meyers. 1 Jun 62, 35p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Thermoelectric generators), Design, Fabrication, Lead alloys, Tellurides.

For abstract, see NSA 28 04, number 10049.

NAA-SR-7048/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
ASSEMBLY OF S-2 DR FUEL ELEMENTS.
W. F. Dennison, and T. S. Jakobowski. 15 Dec 62, 25p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, *Fuel elements), Coatings, Fabrication, Snap reactors, Testing.

For abstract, see NSA 28 04, number 10050.

NAA-SR-7064/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
ENCAPSULATION OF LEAD TELLURIDE THERMOELECTRIC ELEMENTS.
I. J. Groce, and E. L. Reed. 1 Jun 62, 22p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Thermoelectric generators), (*Lead alloys, *Coatings), (*Tellurides, Coatings), Ceramics, Enamels, Sublimation.

For abstract, see NSA 28 04, number 10051.

NAA-SR-7192/GA PC$7.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 PROGRAM QUARTERLY PROGRESS REPORT, JANUARY--MARCH 1962.
C. E. Johnson. 1 Dec 62, 110p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Research programs), (*S8er reactor, *Testing), (*S8dr reactor, Testing), Fuels, Reactor components, Reactor control systems, Reactor cores, Shielding, Snap reactors, Specifications.

For abstract, see NSA 28 04, number 10052.

NAA-SR-7194/GA PC$5.00/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 2/10 REACTOR PROGRESS REPORT, JANUARY--MARCH 1962.
26 Oct 62, 57p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Research programs), (*S2 reactor, Research programs), Design, Fluid flow, Fuel rods, Heat transfer, Reactor components, Reactor cores, Shielding, Snap reactors, Underwater, Zirconium carbides.

For abstract, see NSA 28 04, number 10053.

NAA-SR-7195/GA PC$3.25/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP 4, JANUARY--MARCH 1962.
1 Jul 62, 22p
Contract AT(11-1)-Gen-8

Descriptors: (*S4 reactor, *Fuel rods), Design, Fabrication, Irradiation, Performance, Reactor components, Research programs, Snap reactors, Transport, Uranium hydrides, Water, Zirconium hydrides.

For abstract, see NSA 28 04, number 10054.

NAA-SR-7204/GA PC$4.50/MF$1.45
Atomics International, Canoga Park, Calif.
STATUS REPORT S2DR-1 TESTS, MARCH--DECEMBER 1961.
J. P. Beall, and H. D. May. 1 Oct 62, 48p
Contract AT(11-1)-GEN-8

Descriptors: (*S2ds reactor, *Testing), Design, Diagrams, Fuel rods, Reactor fueling.

For abstract, see NSA 28 06, number 14543.

NAA-SR-7495/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP 4, APRIL--JUNE 1962.
31 Mar 63, 35p
Contract AT(11-1)-GEN-8

Descriptors: (*S4 reactor, *Research programs), Computer calculations, Design, Fuel elements, Reactor kinetics, Reactor stability, Snap reactors, Specifications.

For abstract, see NSA 28 04, number 10055.

NAA-SR-7529/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
EFFECTS OF VIBRATION AND SHOCK ON HYDROGEN PERMEATION OF SNAP 2/10A DEVELOPMENTAL FUEL ELEMENTS.
A. J. Fitzgerald. 1 Mar 63, 42p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Fuel elements), (*S2 reactor, Fuel elements), Hydrogen, Impact shock, Mechanical vibrations, Permeability.

For abstract, see NSA 28 04, number 10056.

NAA-SR-7791/GA PC$6.75/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP 2 NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT, JULY--SEPTEMBER 1962.
D. I. Sinizer. 15 Feb 63, 95p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, *Research programs), Bearings, Configuration, Performance, Radiators, Reactor control systems, Reactor operation, Reactor safety, Snap reactors, Space flight, Testing.

For abstract, see NSA 28 04, number 10057.

NAA-SR-8295/GA PC$9.75/MF$1.45
Atomics International, Canoga Park, Calif.
FINAL REPORT ON THE SNAP 2 DEVELOPMENT REACTOR (S2DR) TEST PROGRAM.
L. D. Felton, J. P. Beall, J. H. Burton, I. I. Camhi, and D. G. Oliver. 3 Apr 64, 151p
Contract AT(11-1)-GEN-8

Descriptors: (*S2 reactor, *Reactor operation), Design, High temperature, Performance, Space propulsion reactors, Testing.

For abstract, see NSA 28 04, number 10058.

NAA-SR-8392/GA PC$11.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 QUARTERLY PROGRESS REPORT, JANUARY--MARCH 1963.
C. E. Johnson. 20 Aug 63, 189p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Design), (*S8er reactor, *Neutron reflectors), Heat transfer, Mockup, Reactor components, Reactor control systems, Reactor cores, Shielding, Testing, Thermal analysis.

For abstract, see NSA 28 06, number 14544.

NAA-SR-8430/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 EXPERIMENTAL REACTOR FABRICATION AND ENGINEERING.
D. C. Campbell, H. D. Decker, T. S. Kirsch, C. A. Martin, and F. C. Schrag. 1 Mar 64, 55p
Contract AT(11-1)-GEN-8

Descriptors: (*S8er reactor, *Fuel elements), Fabrication, Metallurgy, Uranium, Zirconium.

For abstract, see NSA 28 04, number 10059.

NAA-SR-8589/GA PC$5.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 EXPERIMENTAL REACTOR FUEL ELEMENT ACCEPTANCE TESTING.
H. J. Hubbell, and W. E. Nagel. 1 Mar 64, 64p
Contract AT(11-1)-GEN-8

Descriptors: (*S8er reactor, *Fuel elements), Fabrication, Inspection, Reactor cores, Testing.

For abstract, see NSA 28 06, number 14545.

NAA-SR-8613/GA PC$5.00/MF$1.45
Atomics International, Canoga Park, Calif.
FINAL REPORT ON THE SNAP 10A PROTOTYPE CRITICAL ASSEMBLY STUDIES.
D. W. Clifford. 30 Apr 64, 59p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Design), Buckling, Mockup, Neutron reflectors, Reactivity, Reactivity worths, Reactor cores, Reactor shutdown, Thickness, Zero power reactors.

For abstract, see NSA 28 06, number 14546.

NAA-SR-8692/GA PC$13.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 QUARTERLY PROGRESS REPORT, APRIL--JUNE 1963.
C. E. Johnson. 27 Sep 63, 223p
Contract AT(11-1)-GEN-8

Descriptors: (*S8er reactor, *Research programs), (*S8dr reactor, Research programs), (*S8 reactor, Research programs), Design, Fuel elements, Reactor components.

For abstract, see NSA 28 04, number 10060.

NAA-SR-8740/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 DESIGN DESCRIPTION.
D. G. Mason. 1 Aug 63, 54p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Design), Reactor control systems, Reactor cores, Shielding, Snap reactors.

For abstract, see NSA 28 04, number 10061.

NAA-SR-8985/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
EFFECT OF SIMULATED FUEL SWELLING ON HYDROGEN PERMEATION OF SNAP 8 FUEL ELEMENTS.
A. J. Fitzgerald. 15 Mar 64, 35p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Fuel elements), Ceramics, Coatings, Hydrogen, Permeability, Physical radiation effects, Simulation, Snap reactors, Swelling, Uranium hydrides, Zirconium hydrides.

For abstract, see NSA 28 04, number 10062.

NAA-SR-8992/GA PC$12.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 QUARTERLY PROGRESS REPORT, JULY--SEPTEMBER 1963.
C. E. Johnson. 15 Nov 63, 209p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Design), (*S8er reactor, *Testing), (*S8dr reactor, Design), Fuel elements, Reactor components, Reactor control systems, Reactor materials, Reactor safety, Shielding, Thermal analysis.

For abstract, see NSA 28 06, number 14547.

NAA-SR-9293/GA PC$11.50/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT, SNAP 10A NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT, OCTOBER--DECEMBER 1963.
J. Stewart. 15 Feb 64, 189p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Research programs), Design, Pumps, Reactor operation, Reactor safety, Reliability, Snap reactors, Space flight, Testing, Thermoelectric generators.

For abstract, see NSA 28 04, number 10063.

NAA-SR-9295/GA PC$4.50/MF$1.45
Atomics International, Canoga Park, Calif.
HYDROGEN DISSOCIATION PRESSURES OF MODIFIED SNAP FUELS.
H. E. Johnson. 15 Mar 64, 47p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, Nuclear fuels), (*S8 reactor, Nuclear fuels), (*S10 reactor, Nuclear fuels), (*Nuclear fuels, *Dissociation), Carbon additions, Hydrogen, Medium pressure, Pressure dependence, Temperature dependence, Uranium hydrides, Zirconium carbides, Zirconium hydrides.

For abstract, see NSA 28 06, number 14548.

NAA-SR-9297/GA PC$4.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP AEROSPACE SAFETY PROGRAM. QUARTERLY TECHNICAL PROGRESS REPORT, OCTOBER--DECEMBER 1963.
14 Feb 64, 52p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, Fuels), (*Fuels, *Burnup), (*Snaptran reactors, *Fabrication), (*S10 reactor, *In core instruments), Heating, Reactor safety, Reentry, Testing, Wind tunnels.

For abstract, see NSA 28 06, number 14549.

NAA-SR-9392/GA PC$15.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 PROGRESS REPORT, OCTOBER 1963--JANUARY 1964.
C. E. Johnson. 16 Mar 64, 272p
Contract AT(11-1)-GEN-8

Descriptors: (*S8er reactor, *Research programs), (*S8dr reactor, Research programs), (*S8 reactor, Research programs), Fuel elements, Reactor components, Reactor materials.

For abstract, see NSA 28 04, number 10064.

NAA-SR-9394/GA PC$7.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A REACTOR PROGRESS REPORT, OCTOBER 1963--JANUARY 1964.
R. J. Gimera, and R. A. Johnson. 16 Mar 64, 102p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Performance testing), Beryllium, Diagrams, Neutron reflectors, Reactor components, Reactor control systems, Reactor start-up, Reliability, Research programs, Snap reactors, Space flight.

For abstract, see NSA 28 04, number 10065.

NAA-SR-9407/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 2 REACTOR ADVANCED PERFORMANCE CAPABILITY STUDY.
J. D. Gylfe, J. K. Balkwill, W. A. Flynn, D. J. McGoff, and M. E. Nathan. 2 Jun 64, 45p
Contract AT(11-1)-GEN-8

Descriptors: (*S2 reactor, *Performance), Fuel elements, Heat transfer, Hydraulics, Reactor kinetics, Snap reactors.

For abstract, see NSA 28 04, number 10066.

NAA-SR-9486/GA PC$8.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A THERMOELECTRIC PUMP DEVELOPMENT.
M. A. Perlow. 3 Jun 64, 127p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Pumps), Design, Fabrication, Performance testing, Reactor cooling systems.

For abstract, see NSA 28 04, number 10067.

NAA-SR-9496/GA PC$6.75/MF$1.45
Atomics International, Canoga Park, Calif.
QUALIFICATION TESTING SNAP 10A FUEL ELEMENTS (INTERIM REPORT).
A. J. Fitzgerald. 15 Jun 64, 91p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Fuel elements), Reliability, Snap reactors, Thermal cycling, Thermal shock, Thermal testing.

For abstract, see NSA 28 04, number 10068.

NAA-SR-9525(Vol.2)/GA PC$7.00/MF$1.45
Atomics International, Canoga Park, Calif.
BIBLIOGRAPHICAL SURVEY OF SNAP FUEL MATERIALS ZIRCONIUM--URANIUM HYDRIDE AND RELATED ZIRCONIUM AND URANIUM SYSTEMS.
A. W. Barsell, L. D. Montgomery, and J. T. Roberts. 26 Jun 64, 100p
Contract AT(11-1)-GEN-8

Descriptors: (*Zirconium hydrides, *Bibliographies), (*Uranium alloys, Bibliographies), (*Nuclear fuels, Bibliographies), (*Snap reactors, Nuclear fuels), Corrosion resistance, Fuel cans, Fuel elements, Indexes, Research programs, Stability.

For abstract, see NSA 28 05, number 11230.

NAA-SR-9590/GA PC$7.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 2A QUARTERLY PROGRESS REPORT, JANUARY--MARCH 1964.
15 Jun 64, 113p
Contract AT(11-1)-Gen-8

Descriptors: (*S2 reactor, *Design), Fuels, Mockup, Neutron reflectors, Reactor components, Reactor control systems, Reactor materials, Shielding, Testing.

For abstract, see NSA 28 06, number 14550.

NAA-SR-9592/GA PC$15.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 QUARTERLY PROGRESS REPORT, FEBRUARY--APRIL 1964.
C. E. Johnson. 15 Jun 64, 273p
Contract AT(11-1)-GEN-8

Descriptors: (*S8er reactor, *Research programs), (*S8dr reactor, Research programs), (*S8 reactor, Research programs), Design, Fuel elements, Performance testing, Reactor components.

For abstract, see NSA 28 04, number 10069.

NAA-SR-9593/GA PC$10.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT. PROGRESS REPORT, JANUARY--MARCH 1964.
J. Stewart. 15 May 64, 166p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Performance testing), Mechanical tests, S10fs-1 reactor, S10fs-4 reactor, Thermoelectric generators.

For abstract, see NSA 28 06, number 14552.

NAA-SR-9594/GA PC$6.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A REACTOR. QUARTERLY PROGRESS REPORT, FEBRUARY--APRIL 1964.
R. J. Gimera, and R. A. Johnson. 15 Jun 64, 87p
Contract AT(11-1)-GEN-8

Descriptors: (*S10fs-1 reactor, *Research programs), (*S10fs-3 reactor, Research programs), (*S10fs-4 reactor, Research programs), (*S10 reactor, Research programs), Control rod drives, Fuel elements, Performance testing.

For abstract, see NSA 28 04, number 10070.

NAA-SR-9597/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT SNAP AEROSPACE SAFETY PROGRAM, JANUARY--MARCH 1964.
15 May 64, 44p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Testing), (*Snaptran reactors, Testing), Burnup, Configuration, Environment, Fuels, Mockup, Reactivity, Reentry, Soils, Water, Wind tunnels.

For abstract, see NSA 28 06, number 14551.

NAA-SR-9615/GA PC$6.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP REACTOR CONTROL-DRUM DRIVE.
L. G. Kellogg. 24 Aug 64, 92p
Contract AT(11-1)-GEN-8

Descriptors: (*Snap reactors, Control rod drives), (*Control rod drives, *Design), (*S2 reactor, Control rod drives), (*S8 reactor, Control rod drives), Reactor components, S10 reactor.

For abstract, see NSA 28 04, number 10207.

NAA-SR-9618/GA PC$3.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 EXPERIMENTAL REACTOR (S8ER) HYDROGEN BARRIER COATING DEVELOPMENT.
R. W. Webb. 15 Jun 64, 34p
Contract AT(11-1)-Gen-8

Descriptors: (*S8er reactor, *Fuel elements), Ceramics, Coatings, Fuel cans, Hydrogen, Permeability, Snap reactors, Testing.

For abstract, see NSA 28 04, number 10071.

NAA-SR-9642/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 EXPERIMENTAL REACTOR CRITICAL EXPERIMENT.
D. E. Crouter. 15 Sep 64, 44p
Contract AT(11-1)-GEN-8

Descriptors: (*S8er reactor, *Reactor kinetics), Criticality, Power density, Reactivity worths, Reactor cores, Testing.

For abstract, see NSA 28 04, number 10072.

NAA-SR-9646/GA PC$5.50/MF$1.45
Atomics International, Canoga Park, Calif.
RESPONSE OF THE SNAP 8 REACTOR DURING AUTOMATIC STARTUP.
S. Birken. 24 Sep 64, 66p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Reactor start-up), Automation, Computer calculations, Design, Diagrams, Heat transfer, Reactor control systems, Reactor kinetics, Simulation, Snap reactors.

For abstract, see NSA 28 04, number 10073.

NAA-SR-9648/GA PC$4.00/MF$1.45
Atomics International, Canoga Park, Calif.
EVALUATION OF FUEL ELEMENTS FROM SNAP 2 DEVELOPMENT REACTOR CORE.
P. S. Olson. 15 Jan 65, 36p
Contract AT(11-1)-GEN-8

Descriptors: (*Uranium alloys, *Physical radiation effects), (*Zirconium hydrides, Physical radiation effects), (*Snap reactors, *Fuel elements), Beryllium oxides, Burnup, Fuel cans, Hastelloys, High temperature, Hydride moderators, Inspection, Neutron reflectors, Performance.

For abstract, see NSA 28 05, number 11320.

NAA-SR-9704/GA PC$3.50/MF$1.45
Atomics International, Canoga Park, Calif.
MICROSTRUCTURE STUDIES OF SNAP FUELS.
H. Taketani. 30 Mar 65, 27p
Contract AT(11-1)-Gen-8

Descriptors: (*Zirconium hydrides, *Microstructure), (*Uranium alloys, Microstructure), (*Nuclear fuels, Microstructure), (*Snap reactors, Nuclear fuels), Carbon additions, Cracks, Electron microscopy, Electron probes, Grain size, X-ray diffraction.

For abstract, see NSA 28 05, number 11231.

NAA-SR-9754/GA PC$6.00/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 10A REACTOR NUCLEAR ANALYSIS.
A. R. Dayes, W. A. Flynn, and J. P. Hawley. 15 Jan 65, 77p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Design), (*S10fs-1 reactor, *Reactor kinetics), Computer calculations, Diagrams, Environment, Equipment protection devices, Reactor safety, Snap reactors, Space, Testing.

For abstract, see NSA 28 04, number 10074.

NAA-SR-9782/GA PC$4.25/MF$1.45
Atomics International, Canoga Park, Calif.
THERMOPHYSICAL PROPERTIES OF SNAP FUELS.
R. E. Taylor, and C. J. Ambrose. 26 Jun 64, 41p
Contract AT(11-1)-GEN-8

Descriptors: (*Uranium alloys, *Thermodynamic properties), (*Zirconium hydrides, Thermodynamic properties), (*Snap reactors, *Fuel elements), Electric conductivity, High temperature, Medium temperature, Specific heat, Thermal conductivity, Thermal expansion, Very high temperature.

For abstract, see NSA 28 05, number 11232.

NAA-SR-9896/GA PC$8.25/MF$1.45
Atomics International, Canoga Park, Calif.
PERFORMANCE TESTING SNAP 8 EXPERIMENTAL REACTOR FUEL ELEMENTS: INTERIM REPORT.
T. G. Jr. Parker, and S. J. Veeck. 15 Aug 64, 122p
Contract AT(11-1)-GEN-8

Descriptors: (*S8 reactor, *Fuel elements), High temperature, Hydrogen, Losses, Performance testing, Space propulsion reactors.

For abstract, see NSA 28 04, number 10075.

NAA-SR-9901/GA PC$3.50/MF$1.45
Atomics International, Canoga Park, Calif.
MECHANICAL DESIGN OF THE SNAP 10A RADIATION SHIELD.
J. D. Sutherland. 30 Jun 64, 27p
Contract AT(11-1)-GEN-8

Descriptors: (*S10 reactor, *Shielding), Design.

For abstract, see NSA 28 04, number 10076.

NAA-SR-9953/GA PC$3.50/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 DRM-1 FUEL ELEMENT END CLOSURE DEVELOPMENT.
W. F. Dennison, and C. P. Messina. 15 Dec 64, 27p
Contract AT(11-1)-Gen-8

Descriptors: (*S8dr reactor, *Fuel cans), Closures, Design, Fuel elements, Hydrogen, Impact tests, Leak testing, Mechanical vibrations, Thermal testing, Welded joints.

For abstract, see NSA 28 06, number 14553.

NAA-SR-9991/GA PC$11.25/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP SYSTEMS IMPROVEMENT PROGRAM. MERCURY RANKINE PROGRAM. PROGRESS REPORT, APRIL--JUNE 1964.
15 Aug 64, 183p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Rankine cycle), Design, Performance, Radiators, Reactor components, Reactor shutdown, Reactor start-up, Reliability, Research programs, Snap reactors, Space flight, Testing.

For abstract, see NSA 28 04, number 10077.

NAA-SR-9992/GA PC$14.75/MF$1.45
Atomics International, Canoga Park, Calif.
SNAP 8 QUARTERLY PROGRESS REPORT, MAY--JULY 1964.
C. E. Johnson. 22 Sep 64, 254p
Contract AT(11-1)-Gen-8

Descriptors: (*S8 reactor, *Research programs), (*S8er reactor, *Reactor operation), (*S8dr reactor, *Mockup), Design, Electrical equipment, Fabrication, Fuel elements, Primary coolant circuits, Reactor components, Reactor control systems, Snap reactors, Space flight, Testing.

For abstract, see NSA 28 04, number 10078.

NAA-SR-9993/GA PC$7.50/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT, SNAP 10A NUCLEAR AUXILIARY POWER UNIT DEVELOPMENT, APRIL--JUNE 1964, SNAP 10A RELIABILITY STATUS.
20 Nov 64, 110p
Contract AT(11-1)-Gen-8

Descriptors: (*S10 reactor, *Thermoelectric generators), Performance, Reactor components, Reactor control systems, Relays, Reliability, Shielding, Snap reactors, Space flight, Switches, Temperature control, Testing.

For abstract, see NSA 28 04, number 10079.

NAA-SR-9996/GA PC$3.50/MF$1.45
Atomics International, Canoga Park, Calif.
PROGRESS REPORT FOR SNAP (SYSTEMS FOR NUCLEAR AUXILIARY POWER) GENERAL SUPPORTING TECHNOLOGY, MAY--JULY 1964.
L. S. Mims, and R. G. Courson. 30 Sep 64, 28p
Contract AT(11-1)-Gen-8

Descriptors: (*Snap reactors, Shielding), (*Shielding, *Design), Burnable poisons, Computer calculations, Computer codes, Heat transfer, Reactor control systems, Reactor stability, Research programs, Space flight, S10 reactor.

For abstract, see NSA 28 04, number 10080.

19. ORDNANCE

19A. Ammunition, Explosives, and Pyrotechnics

AD-767 860/0GA Not available NTIS
Defence Standards Labs Maribyrnong (Australia)
FRACTURE IN THE HIGH EXPLOSIVE RDX/TNT,
D. L. Smith, and B. W. Thorpe. 17 Feb 73, 3p
Revision of report dated 5 Feb 73.
Availability: Pub. in the Jnl. of Materials Science, v8 p757-759 1973.

Descriptors: (*Explosive materials, Fracture(Mechanics)), TNT, RDX, Shear stresses, Brittleness, Cracks, Thermal stresses, Australia.
Identifiers: Composition B explosive material.

The fracture characteristics of composition B are demonstrated by use of a scanning electron microscope.

AD-767 928/5GA PC$2.75/MF$1.45
Naval Ammunition Depot Crane Ind
THEORETICAL LIGHT YIELDS FROM DIFFERENT ILLUMINATING FLARE COMPOSITIONS,
Henry A. Webster, III, John E. Tanner, Jr., and Bernard E. Douda. 20 Jul 73, 16p Rept no. NAD-CR-RDTR-253

Descriptors: (*Flares, *Illumination), Chemiluminescence, Sodium compounds, Chemical compounds, Combustion, Thermodynamics, Colorimetry, Pyrotechnics.
Identifiers: Illuminating flares.

In an effort to predict improvements in the light output of magnesium-sodium nitrate-binder flare systems and to predict the success of other fuel-oxidizer flare systems, a semi-quantitative model is derived which relates the intensity of visible light emission from a flare to various thermodynamic properties of the combustion reactions which occur. After taking into account various energy losses, the amount of light emitted is determined. Calculations are done using sodium nitrate and sodium perchlorate as oxidizers and various metals, e.g., aluminum, magnesium, beryllium, and silicon as fuels. (Modified author abstract)

AD-767 932/7GA PC$3.00/MF$1.45
Naval Ordnance Lab White Oak Md
HNS/TEFLON, A NEW HEAT RESISTANT EXPLOSIVE,
Harry Heller, and Albert L. Bertram. 1 Jul 73, 36p Rept no. NOLTR-73-163

Descriptors: (*Plastic-bonded explosives, *Heat-resistant materials), (*Nitrobenzenes, Plastic-bonded explosives), Binders, Thermal stability, Sublimation, Molding, Vapor pressure, Seismic waves, Lunar environment, Halocarbon plastics, Fluorine compounds, Differential thermal analysis.
Identifiers: Performance evaluation, Tetrafluoroethylene resins, *HNS explosives, Stilbene/hexanitro, APOLLO.

HNS/Teflon (90/10) is a new pressed explosive developed for use in the APOLLO program. The major advantages of HNS/Teflon are (1) excellent thermal stability at elevated temperatures, (2) superior resistance to sublimation at high temperatures and low pressures and (3) ease of molding powder preparation, pressing and machining. The impact sensitivity of HNS/Teflon is between that of Comp B and Comp A-3 while its explosive performance is about the same as TNT. Under the severe environmental conditions of the moon's surface, this explosive successfully performed its intended function of generating seismic waves in the APOLLO ALSEP and LSPE experiments. (Modified author abstract)

AD-768 038/2GA PC$2.75/MF$1.45
Ocean and Atmospheric Science Inc Dobbs Ferry N Y
WAKE CHARACTERISTICS STUDIES.
Final rept.,
C. D. Grosch, Bernard Harris, E. Y. T. Kuo, M. Bernstein, and R. Gershman. 15 Apr 73, 10p Rept no. OAS-TR-73-173
Contract N00014-72-C-0127, ARPA Order-1910

Descriptors: (*Underwater ordnance, Wake), (*Antisubmarine defense systems, Underwater ordnance), Power spectra, Diffusion, Turbulence, Acoustics, Thermoclines, Detection.
Identifiers: Signal processing, Air water interactions.

The technical details of this contract and its extension are briefly summarized. Specific signal areas of investigation are: diffusion in the wake, signal processing of ocean surface waves, and analyses of oceanographic experiments. (Author)

AD-768 063/0GA PC$37.50/MF$37.50
Picatinny Arsenal Dover N J
ENCYCLOPEDIA OF EXPLOSIVES AND RELATED ITEMS. VOLUME 5.
Technical rept.,
Basil T. Fedoroff, and Oliver E. Sheffield. 1972, 481p* Rept no. PA-TR-2700-Vol-5
Library of Congress catalog card no. 61-61759. See also Volume 4, AD-745 472. Available to non-U.S. addresses PC$40.00, MF$40.00.

Descriptors: (*Explosive materials, *Reviews), Charges(Explosive), Propellants, Projectiles, Ammunition, Fuzes(Ordnance), Combustion, Detonations, Chemical compounds, Electrostatic fields, Dictionaries.
Identifiers: Encyclopedias.

The report is the fifth volume of a continuing effort to comprehensively cover unclassified information on explosives and related subjects. The subject material is presented alphabetically and the entries are supported by references.

AD-768 093/7GA PC$2.75/MF$1.45
Harry Diamond Labs Washington D C
MODIFIED M530A1 FUZE FOR SHORT-RANGE MAN-PORTABLE ANTITANK WEAPONS TECHNOLOGY (SMAWT).
Technical memo.,
Louis Richmond. Jun 73, 23p Rept no. HDL-TM-73-20

Descriptors: (*Rocket fuzes, Design), (*Antitank ammunition, *Rocket fuzes), Point-initiating fuzes, Base detonating fuzes, Fuze functioning, elements, Firing tests(Ordnance), Portable.
Identifiers: SMAWT(Short range Man portable Antitank Weapons Technology), Short range man portable antitank weapons technology, M-530 fuzes.

The report describes the status of a program to modify the M530A1 Fuze for use with SMAWT warheads. Principal modifications consist of providing a second environmental sensor to satisfy requirements of MIL-STD-1316A, and providing crush switch initiation (rather than piezoelectric initiation) to improve reliability on impact with nonconventional armor. This work has been extremely successful; thirty-five modified M530A1 fuzes have been tested for arming and for impact function in the MICOM rocket delivery system, with all units functioning properly. (Author)

AD-768 097/8GA PC$3.00/MF$1.45
Army Land Warfare Lab Aberdeen Proving Ground Md
FROZEN GROUND IMPLEMENT.
Final rept.,
Benjamin F. Wood. May 73, 39p Rept no. LWL-TR-74-01

Descriptors: (*Bursting charges, Soils), (*Soils, Fracture(Mechanics)), Permafrost, Carbon dioxide, Compressed air, Drilling, Debris, Feasibility studies, Passive defense.
Identifiers: *Frozen soils, Foxholes, Excavation, Compressed gases.

The report presents information on an evaluation of commercial-type liquid carbon dioxide blasting cartridges for use in excavation of frozen ground. The purpose was to develop a portable kit to aid in the construction of foxholes in frozen ground without the use of explosives. The kit consisted of an engine-driven hand-held rock drill, and the blasting cartridges. Tests were conducted in both shallow frozen and deep (perma-frost) frozen ground. The results were good in shallow frozen ground. Good results were not achieved in deep frozen ground, because proper techniques or devices were not used to keep the cartridges from ejecting from the bore hole. The requirement was withdrawn, and additional development/testing were not conducted. (Author)

AD-768 117/4GA PC$4.50/MF$1.45
Army Materiel Command Texarkana Tex Intern Training Center
THE DIGITAL SIMULATION OF AN AMMUNITION PRODUCTION LINE,
Ernest Carroll Roberson. Jul 71, 46p Rept no. USAMC-ITC-2-71-11

Descriptors: (*Ammunition, *Production control), Inventory analysis, Inventory control, Maintenance, Costs, Material control, Monte Carlo method, Computer programs.
Identifiers: Digital simulation.

The report describes an assembly line system with buffer inventory and storage areas between successive inventory stages. This area serves as a material supply or storage area when prior or successive stages are inoperative for maintenance reasons. The digital simulation of this model gives consideration to the effects of reliability and maintainability by allowing the operator to specify the distributions of time between breakdowns and time for repairs. Other parameters which may be varied are the initial inventory between stages, the maximum inventory capacities, and the system configuration. (Author)

AD-768 155/4GA PC$3.75/MF$1.45
Ballistic Research Labs Aberdeen Proving Ground Md
AERODYNAMIC CHARACTERISTICS OF OGIVE OVERSIZE-HEAD CYLINDERS STABILIZED BY TAIL-MOUNTED, MULTIPLE FINS OR RING WINGS AT SUPERSONIC MACH NUMBERS.
Memorandum rept.,
Klaus O. Opalka. Jun 73, 83p Rept no. BRL-MR-2303

Descriptors: (*Fin-stabilized ammunition, Supersonic characteristics), (*Projectiles, Fin-stabilized ammunition), Configuration, Ogives, Ring wings, Fins, Afterbodies, Stability, Wind tunnel models.
Identifiers: Tube launched projectiles.

Test data are reported for two ring-wing and two multiple-fin stabilizers mounted on the tail of a cylinder combined with ogive oversize heads of 1.38 caliber diameter and varying lengths. Wind tunnel tests were run at five (5) Mach numbers from 1.75 to 3.5 and the resulting aerodynamic coefficients are plotted versus angle of attack and Mach number. The results are discussed regarding their effects on the longitudinal stability for the various configurations. (Author)

AD-768 158/8GA PC$3.75/MF$1.45
Army Missile Command Redstone Arsenal Ala Aeroballistics Directorate
RESULTS OF A TRANSONIC WIND TUNNEL INVESTIGATION OF THRUST EFFECTS ON THE AERODYNAMICS OF FOUR LONGITUDINALLY-SUPPORTED RINGTAIL MISSILE CONFIGURATIONS.
Technical rept.,
J. H. Henderson. Oct 73, 93p Rept no. RD-73-15 AMC-DR-1017

Descriptors: (*Projectiles, *Fin-stabilized ammunition), Stability, Angle of attack, Rocket motor nozzles, Configuration, Afterbodies, Wind tunnel models, Fins.
Identifiers: Ringtail configurations, Tube launched missiles.

Transonic wind tunnel tests were conducted on a strut-supported model to determine thrust effects on four longitudinal strut supported ringtail configurations. The configurations were achieved by varying the distance between the nozzle exit plane and the ringtail. Thrust was simulated by cold air and was varied from 0 to 400 pounds. Of primary interest, was the effect of thrust level and longitudinal position of the nozzle exit plane on missile stability. For the thrust levels tested, a favorable effect on longitudinal stability was experienced on the configuration with the nozzle exit plane located at the ringtail leading edge. The test was conducted at the Calspan Corporation's 8 foot Transonic Wind Tunnel at Mach numbers ranging from 0.4 to 1.2. Angles of attack were from -5 degrees to +6 degrees at a sideslip angle of 0 degrees. Thrust, from 0 to 400 pounds, was the only varying parameter. (Author)

AD-768 160/4GA PC$3.50/MF$1.45
Army Electronics Command Fort Monmouth N J
MAGNETIC CIRCUIT DESIGN STUDIES FOR AN INDUCTIVE SENSOR.
Technical rept.,
Herbert A. Leupold, Frederick Rothwarf, Carl J. Campagnoulo, Henry Lee, and Jonathan E. Fine. Oct 73, 64p Rept no. ECOM-4158

Descriptors: (*Transducers, Arming devices), Fuzes(Ordnance), Magnets, Permeability(Magnetic), Cobalt Alloys, Samarium compounds, Intermetallic compounds, Voltage, Projectiles.
Identifiers: Electromechanical transducers, Magnetic circuits, Reluctance, Cobalt intermetallics, Samarium intermetallics.

A procedure for a calculating the approximate voltage outputs of a class of magnetic fuze transducers was developed. The method is applied to three different configurations to be used in artillery shells and the results compared with both prior and subsequent measurements made at Harry Diamond Laboratories (HDL). The agreement of the calculated voltage vs velocity curves with those obtained experimentally is surprisingly good, the deviation in all cases falling well within 10%. For one of these configurations more precise computer calculations are done as well. These agree with our approximation procedure to within less than 3%. The approximate long-hand method is then employed to recalculate the output voltages expected if the Alnico 5 magnets presently used were replaced by Co5Sm. An approximately 50% increase in output is predicted for the two more efficient configurations while for the remaining case the effect of the replacement of material is, if anything, slightly deleterious. Various experimental tests of some of the underlying assumptions were made to verify as much as possible the general applicability of the techniques employed. (Author)

AD-768 161/2GA PC$3.75/MF$1.45
Picatinny Arsenal Dover N J
RESPONSE OF LEAD AZIDE TO SPARK DISCHARGES VIA A NEW PARALLEL-PLATE ELECTROSTATIC SENSITIVITY APPARATUS.
Technical rept.,
Maurice S. Kirshenbaum. Jun 73, 94p Rept no. PA-TR-4559

Descriptors: (*Explosive materials, Sensitivity), Azides, Lead compounds, Electrostatic fields, Styphnates, Spark ignition, Test methods.
Identifiers: Spark gap tests, Electrostatic sensitivity.

The report describes a fixed-gap, spark discharge apparatus having parallel-plate electrodes, and instrumentation for measuring time-dependent spark characteristics. The response of lead azide (RD 1333) to gaseous spark discharge as a function of the electrode geometry and of the properties of the discharge circuit was studied. A method for measuring the energy in the spark gap is described. A computer program was developed for reducing the data from the observed current and voltage waveforms to current, voltage, power and energy in the gap and for plotting these values as a function of time. (Author)

AD-768 227/1GA PC$2.75/MF$1.45
Cambridge Univ (England) Cavendish Lab
INITIATION OF EXPLOSIVES BY LOW STRENGTH SHOCKS.
Final technical rept. Jul 72-Jun 73,
D. Tabor, J. E. Field, M. M. Chaudhri, W. L. Ng, and S. N. Heavens. Jun 73, 21p ERO-E-1452
Contract DAJA37-72-C-2584

Descriptors: (*Explosive materials, Ignition), PETN, RDX, HMX, TNT, Tetryl, Shock(Mechanics), Pyrolysis, Impact tests, Great Britain.
Identifiers: Shock initiation.

The report describes a study of initiation processes involving weak (i.e., Kbar strength) shocks. The rapid collapse of a gas space onto the surface of an explosive has been photographed directly and it is shown that adiabatic heating of the gas can cause initiation of azide crystals within 10 to the -7th power seconds. Gas bubbles down to 50 micrometers in diameter have been shown to be effective. The impact behaviour of films of the secondary explosives, PETN, RDX, HMX, TNT and Tetryl in the drop-weight test has been photographed in transmission. PETN has been shown to ignite at local hot spots following melting and flow. Mass spectrometry studies of thermally induced and fracture induced decomposition due to fragmentation can be important. Experimental results on initiation by micro-particle impact and by electrical breakdown are presented. (Author)

N73-29959/6GA PC$3.00/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
OPTICALLY DETONATED EXPLOSIVE DEVICE.
Patent Application.
L. C. Yang, and V. J. Menichelli. 3 Aug 72, 12p
NASA-CASE-NPO-11743-1, US-PATENT-APPL-SN-277904
Subm-Sponsored by NASA.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Detonation, *Explosives, *Laser outputs, *Metal films, *Optical equipment, *Shock waves, Fiber optics, Patent applications, Product development, Q switched lasers.

For abstract, see STAR 1120

PATENT-3 712 232/GA Not available NTIS
Department of the Navy Washington D C
VARIABLE DELAY FUSE FOR AIRCRAFT PARACHUTE FLARE.
Patent,
Carroll Abel, John R. Clifton, and James R. Lueking. Filed 23 Oct 68, patented 23 Jan 73, 8p
Rept nos. PAT-APPL-769 999,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Time-delay fuzes, *Patents), (*Aircraft flares, Time-delay fuzes), Parachute flares, Fuze functioning elements, Parachutes, Deployment.
Identifiers: PAT-CL-102-85-2.

The invention relates to a delay fuse for an aircraft parachute flare and more particularly to a delay fuse having improved reliability and safety features.

PATENT-3 713 394/GA Not available NTIS
Department of the Navy Washington D C
SMOKE SIGNAL DEVICE.
Patent,
Sherman E. Dare, Davey S. Haas, Stanley J. Herold, Steven R. Norris, and Terry V. Patterson. Filed 1 Mar 71, patented 30 Jan 73, 4p Rept nos. PAT-APPL-119 765,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Smoke projectiles, *Patents), Smokes, Flares, Pistols, Projectors(Ordnance).
Identifiers: PAT-CL-102-90.

The report relates to a smoke signal device adaptable for attaching to a pistol and being launched by firing the pistol. An adapter is provided which slip-fits onto a pistol barrel and a base having a percussion primer therein is removably attached to the adapter. A case having a quantity of smoke-producing composition therein is attached to the forward end of the base and an ignition train is provided to ignite the smoke-producing composition upon detonation of the percussion primer. The case is separated from the base upon ignition and a trailing smoke signal is emitted from the case during flight.

PATENT-3 720 166/GA Not available NTIS
Department of the Navy Washington D C
APPARATUS AND METHOD FOR TERRAIN CLEARANCE.
Patent,
Robert G. S. Sewell, and Carl C. Halsey. Filed 2 Aug 71, patented 13 Mar 73, 4p Rept nos. PAT-APPL-168 358,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Deformable projectiles, *Patents), Propelling charges, Trees, Removal, Rods.
Identifiers: PAT-CL-102-22, Terrain clearance.

The patent relates to a rod expelling explosive apparatus used to clear bushes and trees from foliage covered terrain. The apparatus comprises a box containing a linear explosive charge and at least one rod which is forcefully expelled at high velocity when the charge is detonated. The method involves placing rod expelling apparatus on the ground in a position such that the rod or rods will be expelled in a predetermined desired direction at a trajectory just above ground level and detonating the charge.

PATENT-3 723 207/GA Not available NTIS
Department of the Navy Washington D C
PROCESS FOR PREPARING STABLE ESSENTIALLY WATER-FREE SLURRIES OF NITROCELLULOSE AND PRODUCTS THEREOF.
Patent,
Albert T. Camp. Filed 23 Oct 70, patented 27 Mar 73, 3p Rept nos. PAT-APPL-83 659,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Nitrocellulose, *Patents), Water, Organic nitrogen compounds, Explosive materials, Propellants, Stabilization, HMX.
Identifiers: PAT-CL-149-92, Azeotropes.

The invention relates to essentially water-free stable compositions of propellant and explosive ingredients and more particularly to a process for preparing essentially water-free stable slurries containing plastisol nitrocellulose and the products thereof.

19D. Explosions, Ballistics, and Armor

AD-767 795/8GA PC$3.75/MF$1.45
Technion - Israel Inst of Tech Haifa Dept of Materials Engineering
EXPERIMENTAL INVESTIGATION OF NORMAL PERFORATION OF PROJECTILES IN METALLIC PLATES.
Interim rept.,
J. Awerbuch, and S. R. Bodner. Jun 73, 35p Rept nos. MED-41, Scientific-4 AFOSR-TR-73-1723
Contract F44620-72-C-0004

Descriptors: (*Projectiles, Terminal ballistics), (*Metal plates, Penetration), Firing tests(Ordnance), Impact, Shear stresses, Armor, Fragmentation, Spallation, Israel.

The report describes an experimental program on ballistic perforation of metallic plates. Three kinds of rifles and various steel and aluminum target plates were used. Measurements were made of the initial and post-perforation velocities and in some cases of the time duration of perforation. High speed photographs were taken during the perforation process and detailed studies were made on sections of the perforated target plates. The examination of the physical process of perforation served to motivate aspects of the analytical treatment presented in an associated paper. The experimental results, i.e., post-perforation velocities and duration times, were found to be in good agreement with predictions of the associated analysis. (Author)

AD-767 985/5GA PC$9.50/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
THE THEORY OF COMBUSTION AND DETONATION,
K. I. Shchelkin. 12 Sep 73, 150p Rept no. FTD-MT-24-324-73
Edited machine trans. of mono. Mekhanika v SSR za 50 Let, n.p., 1970 v2 p344-422, by Robert D. Hill.

Descriptors: (*Detonations, Theory), (*Explosions, Flame propagation), (*Flame propagation, Theory), (*Combustion, Explosions), Stability, Turbulence, Thermodynamics, USSR, Deflagration, Detonation waves, Mechanical waves, Shock waves.
Identifiers: Translations.

The translation reviews and discusses theories of combustion, flame propagation and instability in explosions, detonations, and normal burning.

LA-5278-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
DECAY OF OVERDRIVEN DETONATIONS IN NITROMETHANE.
W. Fickett. May 73, 4p
Contract W-7405-eng-36

Descriptors: (*Nitro compounds, *Shock waves), Luminosity, One-dimensional calculations.

For abstract, see NSA 28 06, number 15143.

SLA-73-337/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
COMPARISON OF POST-SHOT PREDICTION AND RECORDED RESPONSE TO AN AIRBLAST.
D. M. Ellett. Jun 73, 15p

Descriptors: (*Chemical explosions, *Ground motion), (*Buildings, *Seismic effects), Shock waves, Underground explosions.

For abstract, see NSA 28 06, number 12830.

SLA-73-508/GA PC$3.75/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
EXPERIMENTAL-THEORETICAL CORRELATION ON THE CONTAINMENT OF EXPLOSIONS IN CLOSED CYLINDRICAL VESSELS.
R. A. Benham, and T. A. Duffey. Jun 73, 31p

Descriptors: (*Containers, *Explosive forming), (*Chemical explosions, *Containment), Cylindrical configuration.

For abstract, see NSA 28 06, number 12803.

19E. Fire Control and Bombing Systems

AD-767 673/7GA PC$13.25/MF$1.45
Naval Postgraduate School Monterey Calif
APPLICATION OF STOCHASTIC APPROXIMATION THEORY TO FIELD ARTILLERY PRECISION FIRE.
Master's thesis,
Milivoj Tratensek. Jun 73, 225p

Descriptors: (*Artillery fire, *Fire control systems), Circular error probable, Miss distance, Impact prediction, Range tables, Kill probabilities, Artillery units, Theses, Computer programs, Simulation.
Identifiers: Computerized simulation, Stochastic approximation.

The thesis is addressed to the problem of determining optimal precision fire methods for the Field Artillery. The current precision fire technique has been in use by the Field Artillery since 1941. Because of the general acceptance that the method works, the procedure has remained relatively unchanged for 32 years; no documented evidence of previous efforts to establish an analytical basis for the procedure apparently exists. Employing the methods of stochastic approximation, the theoretical foundation for the current procedure is established. Using the developed theoretical foundation of the current precision fire method, a simplified, more efficient procedure is developed. In addition, an optimal precision fire procedure to be used when forward observers are equipped with laser range finders is presented. The procedures are compared analytically and through computer simulations to arrive at conclusions regarding simplicity, accuracy and economy of ammunition expenditures. (Author)

AD-768 082/0GA PC$3.50/MF$1.45
Army Weapons Command Rock Island Ill General Thomas J Rodman Lab
PKEVAL. DIGITAL COMPUTER MODEL FOR AIR TO GROUND (P SUB K) EVALUATIONS.
Technical rept.,
Harry P. Jones. Sep 73, 59p Rept no. AMSWE-RR-T-4-71-73

Descriptors: (*Aerial gunnery, Effectiveness), (*Helicopters, *Aircraft fire control systems), Kill probabilities, Flight paths, Surface targets, Vulnerability, Mathematical models, Computer programs.
Identifiers: Digital simulation.

A digital computer model has been developed for simulation of an aircraft attack upon a ground target. The model is an expected value type model which can be used to predict hit probability or kill probability given vulnerability data. Input and output parameters of the model are discussed and examples are presented. (Author)

AD-768 083/8GA PC$5.50/MF$1.45
Army Weapons Command Rock Island Ill General Thomas J Rodman Lab
SYSTEMS EFFECTIVENESS, GUN AIRCRAFT WEAPON SIMULATION (SEGAWS).
Technical rept.,
T. J. Flynn, R. S. Newell, and H. P. Jones. Jan 73, 210p Rept no. SWERR-TR-73-1

Descriptors: (*Aerial gunnery, Effectiveness), (*Helicopters, *Aircraft fire control systems), Kill probabilities, Miss distance, Flight paths, Exterior ballistics, Vulnerability, Monte Carlo method, Numerical analysis.

A digital computer simulation model has been developed for analysis of gun aircraft weapon system effectiveness. The model is a Monte Carlo type in which an aircraft engages a hostile ground target. Various maneuvers, terrain, aircraft, and weapon characteristics can be played. A technical description of the model is presented and examples are presented. (Author)

19G. Rockets

AD-767 688/5GA PC$2.75/MF$1.45
Naval Postgraduate School Monterey Calif
DESIGN BUCKLING CURVES FOR GUN LAUNCHED ROCKETS,
David Salinas, and Robert E. Ball. 24 Aug 73, 17p Rept no. NPS-59ZC73081A

Descriptors: (*Rocket cases, Buckling(Mechanics)), (*Rockets, Gun launched), Aerodynamic loading, Acceleration, Structural shells, Cylindrical bodies, Modulus of elasticity, Stresses, Numerical analysis.
Identifiers: Elastic buckling, SATANS computer program, Computer aided design, Cylindrical shells, Finite difference theory.

An investigation of elastic buckling of gun-launched motor cases is considered. The SATANS finite difference computer program was used for the analysis. Comparative results from other buckling models were obtained to verify the results. The results are summarized in a set of design curves and show that for the proposed design parameters, the elastic behavior is exceeded before buckling can occur. (Author)

20. PHYSICS

20A. Acoustics

AD-767 800/6GA PC$2.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
DIRECTIONAL CORRELATION FUNCTIONS OF THE SEA SURFACE.
Memo.,
Robert H. Mellen. 15 Aug 73, 11p Rept no. SACLANTCEN-SM-17

Descriptors: (*Underwater sound, Surfaces), Reflection, Integrals, Statistical functions, Italy.
Identifiers: Correlation, Sea states, Ocean surface.

The Roll-Fisher wave-height frequency spectrum of the fully-developed sea, is used to obtain closed-form spatial correlation functions for arbitrary wave directionality and directional asymmetry.

AD-767 809/7GA PC$3.00/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
FUNDAMENTAL APPROXIMATIONS FOR THE SCATTERING OF ACOUSTIC WAVES FROM A ROUGH SURFACE.
Memo.,
Helmut Trinkaus. 1 Aug 73, 31p Rept no. SACLANTCEN-SM-15

Descriptors: (*Underwater sound, Scattering), Sound transmission, Surface roughness, Approximation(Mathematics), Green's function, Integral equations, Integral transforms, Boundary value problems, Italy.
Identifiers: *Acoustic scattering, Helmholtz integral, Fourier transformation, Rayleigh's Ansatz.

The three main types of approximations used for the scattering of acoustic waves from rough surfaces are discussed: Rayleigh's Ansatz, the Kirchhoff geometrical-interference approach and the perturbation technique as used by Meecham. In order to compare them they are given in a uniform wave-number representation. They are justified with aid of the Helmholtz integral, which is completely Fourier-transformed. In each approximation the scattering formulae consist of the product of two parts: one that is represented by a spectrum of the phase modulations induced by the surface irregularities and another that is a geometrical factor. The corresponding first steps in each approximation are shown to be quite close to each other. The limits of validity are estimated. An interpolation formula unifying the different types of approximations is proposed. (Author)

AD-767 812/1GA PC$2.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
ATTENUATION IN RANDOMLY INHOMOGENEOUS SOUND CHANNELS.
Memo.,
Robert H. Mellen. 15 Aug 73, 13p Rept no. SACLANTCEN-SM-16

Descriptors: (*Underwater sound, Attenuation), Sea water, Sound transmission, Scattering, Absorption, Italy.
Identifiers: Acoustic absorption.

Estimates of the absorption of sound in sea water, based on sound channel experiments, can be seriously affected by scattering from random inhomogeneities in sound speed. Ray diffusion theory leads to an additional component of attenuation independent of frequency. Order of magnitude estimates of diffusion loss, calculated from perturbations in the sound speed profiles, are in reasonable agreement for a broad range of experimental data. (Author)

AD-767 813/9GA PC$2.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
RAY DIFFUSION IN AN OCEAN-FRONT REGION.
Memo.,
Robert H. Mellen. 15 Sep 73, 18p Rept no. SACLANTCEN-SM-22

Descriptors: (*Underwater sound, Attenuation), Sea water, Diffusion, Sound transmission, Italy.
Identifiers: Shadow zones, Caustics, Acoustic velocity, Ionian Sea.

Sound speed profiles from an ocean-front region are analysed to determine the magnitude and vertical scale-size of the sound-speed inhomogeneities. Order-of-magnitude estimates are made for the effects of ray diffusion on the attenuation in the sound channel and the intensity distribution near caustics. (Author)

AD-767 816/2GA PC$2.75/MF$1.45
Saclant ASW Research Centre La Spezia (Italy)
AN EXPERIMENT TO VERIFY THE CONSERVATION OF AVERAGE RECEIVED SOUND ENERGY AFTER REFLECTION BY THE ROUGH SEA SURFACE.
Memorandum,
Willem Wijmans. 1 Oct 73, 15p Rept no. SACLANTCEN-SM-27

Descriptors: (*Underwater sound, Reflection), Ocean waves, Surface roughness, Sound transmission, Underwater explosions, Power spectra, Italy.
Identifiers: Ray tracing, Signal processing, Ocean surface.

A simple experiment, using explosive sound sources, has been performed at sea to verify the conservation of the average total energy received at an omnidirectional hydrophone after reflection by the rough sea surface. Although the data sample is small, some conclusions can be reached about the extent of conservation versus surface roughness and grazing angle at the surface. (Author)

AD-767 844/4GA Reprint
Rensselaer Polytechnic Inst Troy N Y Dept of Mathematics
SOUND TRANSMISSION IN A CHANNEL WITH BILINEAR SOUND SPEED AND ENVIRONMENTAL VARIATIONS.
Technical rept.,
Melvin J. Jacobson, and Ralph N. Baer. 21 Feb 73, 15p
Contract N00014-67-A-0117-0002
Availability: Pub. in the Jnl. of the Acoustical Society of America, v54 n1 p80-91 1973.

Descriptors: (*Underwater sound, Sound transmission), Propagation, Reflection, Velocity, Refraction, Deep water, Mathematical models.
Identifiers: Ray tracing, Geometrical acoustics, Acoustic velocity.

The effects in a bounded channel of a bilinear sound-speed profile on ray geometry, travel time, and spreading loss are examined. General equations are derived. The case of bottomed source and receiver is considered in detail. Appropriate approximations are made and properties of the ray geometry, travel time, spreading loss, and the total acoustic field at the receiver are deduced. It is shown that the gross characteristics of observed phase variations off Bermuda may be generated by changes in sound speed associated with Rossby waves and tidal effects. The addition of the model of tidal depth variation leads to intensity variation which accounts for 80% of the range of intensity variations observed near Bermuda. (Author)

AD-768 299/0GA PC$3.00/MF$1.45
Naval Underwater Systems Center New London Conn New London Lab
HYDROLOGY AND ACOUSTIC MEASUREMENTS OF LAKE TANGANYIKA.
Technical rept.,
Everett N. Jones, John M. Gorman, William H. Thorp, and David G. Browning. 10 Sep 73, 24p Rept no. NUSC-TR-4577

Descriptors: (*Underwater sound, *Lakes), Low frequency, Attenuation, Velocity, Salinity, Magnesium, Experimental data, Thermoclines, Subsaharan Africa.
Identifiers: *Lake Tanganyika, Water chemistry.

Lake Tanganyika was selected as an experimental site for the investigation of low-frequency sound attenuation because of its high ambient temperature and low dissolved salt content. Hydrological measurements obtained in support of the acoustic program exactley specified the sound medium and revealed other physical and chemical properties of the lake. Attenuation coefficients determined for the frequency range 800 to 10,000 Hz showed a departure from widely observed sea water results in that no low-frequency excess was discernible, yet attenuation exceeded the viscous absorption. It is proposed that the sound attenuation observed in Lake Tanganyika is attributable to the 43-ppm concentration of magnesium occurring in its waters and a chemical relaxation process related thereto. (Author)

N73-29101/5GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

TRANSMISSION OF WAVE ENERGY IN CURVED DUCTS.
W. Rostafinski. 1973, 9p NASA-TM-X-68287, E-7207
Conf-Presented at the 11TH Bien. Fluid Dyn. Symp. Of the Polish Acad. Of Sci., Sopot, Poland, 3-8 Sep. 1973.

Descriptors: *Ducts, *Sound waves, *Wave propagation, Bessel functions, Boundary value problems, Sound intensity, Transmissivity, Wave equations.

For abstract, see STAR 1120

N73-29722/8GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
A DIFFERENCE THEORY FOR NOISE PROPAGATION IN AN ACOUSTICALLY LINED DUCT WITH MEAN FLOW.
K. J. Baumeister, and E. J. Rice. 1973, 9p NASA-TM-X-68295, E-7644
Conf-Proposed for Presentation at AERO-Acoustic Specialists Conf., Seattle, 15-17 Oct. 1973; Sponsored by Aiaa.

Descriptors: *Ducted flow, *Finite difference theory, *Noise reduction, Acoustic attenuation, Acoustic ducts, Sound propagation, Sound waves.

For abstract, see STAR 1120

20B. Crystallography

AAEC/E-257/GA PC$3.00/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
MODIFIED VERSION OF THE BUSING-MARTIN-LEVY LEAST SQUARES PROGRAM FOR THE DIRECT FITTING OF STRUCTURES TO POWDER DIFFRACTION PATTERNS BY THE METHOD OF PROFILE ANALYSIS.
J. C. Taylor, and G. W. Cox. Mar 73, 9p
U.S. Sales Only.

Descriptors: (*Powders, *Neutron diffraction), (*Uranium hexafluoride, Neutron diffraction), Computer codes, Crystallography, Gauss function, Least square fit.

For abstract, see NSA 28 06, number 13347.

AD-768 088/7GA PC$3.00/MF$1.45
Watervliet Arsenal N Y
FORBIDDEN SI (442) STRUCTURE FACTOR.
Technical rept.,
A. Marcus Gray. Sep 73, 15p Rept no. R-WV-N-6-33-73

Descriptors: (*Silicon, *X-ray diffraction analysis), (*Band theory of solids, Silicon), Crystal structure.
Identifiers: Form factors.

A recent measurement by Trucano and Batterman of the forbidden Si (442) x-ray structure factor prompted the author to calculate this value by using a simple model for the electronic charge distribution with parameters determined from a given set of allowed formfactors. For the allowed form-factor experimental values of Raccah et al were used. For T = OK it was found that F(442) = 0.082 plus or minus 0.010, compared to Trucano and Batterman's bond value of 0.089 plus or minus 0.007 converted to T = OK. (Modified author abstract)

AD-768 283/4GA PC$2.75/MF$1.45
Perkin-Elmer Corp Wilton Conn
MOLECULAR BEAM EPITAXY OF II-VI COMPOUND WAVEGUIDES.
Quarterly technical rept. 1 Jul-30 Sep 73,
Donald L. Smith. 30 Sep 73, 23p Rept no. PE-11719
Contract N00014-73-C-0280, ARPA Order-2327

Descriptors: (*Semiconducting films, Epitaxial growth), (*Waveguides, Electrooptics), Zinc compounds, Tellurides, Vapor plating.
Identifiers: Electrooptic waveguides, Zinc tellurides, *Optical waveguides.

Optical waveguide growth is being pursued using molecular beam epitaxy, a closely-controlled form of vacuum evaporation, under ultra-high vacuum. Zn and Te2 vapor pressures over the elements and over ZnTe have been measured and correlated with film growth behaviour. Optically-clear, mirror-smooth, monocrystalline, 1 micron thick films of ZnTe have been grown at 1 micron/hour on 350C CaF2(111) substrates using separate elemental sources of 6-nines pure Zn and Te. Film stoichiometery was insensitive to incident Zn/Te flux ratio. Films were polycrystalline at 450C and ceased to deposit at 500C. Films grown from a single 5-nines pure ZnTe source of inferior quality. Single-crystal CdSe(0001) substrates have been prepared by Br/MeOH polishing and ion bombardment. (Modified author abstract)

JUL-862-AC/GA PC$3.25/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Zentralinstitut fuer Analytische Chemie.
AUTOMATIC TIME SWITCH FOR PHOTOGRAPHIC DEBYE-SCHERRER MEASUREMENT OF POWDERED CRYSTALS.
P. Krumpen, M. Rauschen, and W. Reichert. Jun 72, 24p
In German. U.S. Sales Only.

Descriptors: (*Crystals, *Quantitative chemical analysis), (*Mixtures, Quantitative chemical analysis), Debye-scherrer method, Powders, Switches, X-ray diffraction.

For abstract, see NSA 28 04, number 10578.

N73-29532/1GA PC$6.50/MF$1.45
Fabric Research Labs., Inc., Dedham, Mass. Research Labs.
STUDY OF SINGLE CRYSTALS OF METAL SOLID SOLUTIONS.
Final Report.
J. P. Doty, and J. A. Reising. 21 May 73, 86p
NASA-CR-124354
Contract NAS8-29077

Descriptors: *Crystal growth, *Crystal structure, *Metal crystals, *Single crystals, *Space manufacturing, Copper, Gold, Materials tests, Physical properties, Silver, Space missions, Weightlessness.

For abstract, see STAR 1120

UR-3490-326/GA PC$8.50/MF$1.45
Rochester Univ., N. Y. Dept. Of Radiation Biology and Biophysics.
LATTICE ENERGIES OF ALKALINE EARTH HALIDE CRYSTALS WITH POLARIZABLE ATOMS AND THE CRYSTAL STRUCTURE OF HYDRATED SODIUM COPPER PYROPHOSPHATE NA SUB 6 CU(P SUB 2 O SUB 7) SUB 2 .16 H SUB 2 O.
P. -S. Yuen. 1973, 129p

Descriptors: (*Alkaline earth metal compounds, *Lattice parameters), Copper phosphates, Crystal structure, Halides, Hydrates, Sodium phosphates.

For abstract, see NSA 28 05, number 12603.

Y-1877/GA PC$4.00/MF$1.45
Oak Ridge Y-12 Plant, Tenn. (Usa).
COMPUTER-SIMULATED X-RAY-DIFFRACTION DATA FOR DERIVATIVE STRUCTURES OF ALPHA -RHOMBOHEDRAL BORON.
C. E. Jr. Holcombe, and A. L. Jr. Coffey. 31 May 73, 17p
Contract W-7405-eng-26

Descriptors: (*Boron compounds, *Crystal structure), (*Boron oxides, Crystal structure), Carbon additions, Computer calculations, Data, Interstitials, Order parameters, Oxygen additions, Phosphorus additions, Solid solutions, Trigonal lattices, X-ray diffraction.

For abstract, see NSA 28 05, number 11342.

20C. Electricity and Magnetism

AD-768 095/2GA PC$2.75/MF$1.45
Harry Diamond Labs Washington D C
GUN-DRIVEN FLUX COMPRESSION,
Michael J. Vrabel, and Richard P. Leavitt. May 73, 18p Rept no. HDL-TR-1632

Descriptors: (*Magnetic fields, Light gas guns), Generators.
Identifiers: Flux(Rate).

A projectile accelerated to a velocity of 1 mm/microsec by a helium-driven gun was used to generate a magnetic field of 1.3 MG, using the technique of flux compression. The design of the flux-compression device was optimized with the aid of a simplified theory. This theory was used to investigate the relationship of maximum field to coil geometry, seed field, and projectile velocity. (Author)

N73-29443/1GA PC$6.25/MF$1.45
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
EXPERIMENTAL INVESTIGATION OF A WALL STABLIZED ARC WITH COMPARISONS TO THEORETICAL PREDICTIONS.
M.S. Thesis - George Washington Univ., Washington, D. C.
W. L. Wells. Jun 73, 82p NASA-TM-X-69571

Descriptors: *Arc heating, *Electric potential, *Heat flux, *Pressure, Gas flow, Nitrogen, Temperature measurement.

For abstract, see STAR 1120

20D. Fluid Mechanics

AD-767 668/7GA PC$5.25/MF$1.45
Lehigh Univ Bethlehem Pa Dept of Mechanical Engineering and Mechanics
INTERACTION OF TWO PERPENDICULAR BOUNDED JETS.
Technical rept.,
Y. S. Cha, and J. A. Owczarek. Aug 73, 182p Rept no. THEMIS-LU-TR-17
Contract N00014-69-A-0417

Descriptors: (*Jets, Interactions), (*Nozzle gas flow, *Turbulence), Incompressible flow, Anemometers, Nozzles, Deflection, Measurement, Model tests, Test facilities, Mathematical models, Pressure, Mathematical prediction, Velocity, Statistical distributions.
Identifiers: Bounded jets, Hot wire anemometry, Velocity distribution.

The interaction of two incompressible, turbulent bounded jets was investigated experimentally by using hot wire technique. Detailed measurements of velocity in the interaction zone and farther downstream were made for different values of setback, width of the control jet nozzle and control jet total pressure. Turbulence intensity profiles across the jet for various distances downstream from the stronger (power) jet nozzle exit are also reported. Angles of deflection of the power jet were determined experimentally. Two analytical fluid models were used in predicting the angle of deflection. (Modified author abstract)

AD-767 672/9GA PC$6.75/MF$1.45
Naval Postgraduate School Monterey Calif

EXPERIMENTAL TECHNIQUES IN HOLOGRAPHIC INTERFEROMETRY.
Master's thesis,
Richard Allan Everett. Jun 73, 92p

Descriptors: (*Flow visualization, *Interferometers), Stereoscopic photography, Fiber optics, Lasers, Flow fields, Three-dimensional flow, Computer programs, Theses.
Identifiers: *Interferometric holography, *Holography.

Fiber light guides are used in conjunction with holographic interferometry. A Michelson interferometer was constructed to test for temporal coherence of light passing through fiber optics. A finite-fringe hologram of a no-flow condition was taken to prove the feasibility of applying fiber optics to this field of flow investigation. The effect of opaque bodies on interferometric data inversion was sought. Two schemes for replacing the missing fringe data were used to see if the accuracy of the calculated density fields could be enhanced. (Author)

AD-767 764/4GA PC$3.00/MF$1.45
Martin Marietta Labs Baltimore Md
THREE-DIMENSIONAL LAMINAR BOUNDARY LAYER OVER BODY OF REVOLUTION AT INCIDENCE. PART VII. THE EXTREMELY HIGH INCIDENCE CASE,
K. C. Wang. Jul 73, 45p Rept no. MML-TR-73-08c
AFOSR-TR-73-1265
Contract F44620-70-C-0085
See also report dated May 73, AD-763 831.

Descriptors: (*Three-dimensional flow, *Laminar boundary layer), (*Blunt bodies, *Laminar flow), Flow separation, Boundary value problems, Stagnation point, Difference equations, Skin friction, Mathematical models.
Identifiers: Finite difference theory, Computer aided analysis.

The report presents results of exact, full three-dimensional solutions of the incompressible laminar boundary layer over a prolate spheroid at an extremely high incidence. In contrast to the high incidence (30 degrees) case recently reported, this extremely high incidence (45 degrees) problem is characterized by features reflecting the predominance of the circumferential flow over the meridional flow and, more importantly, by a closed, rather than an open, separation pattern. These features include much larger circumferential skin friction than meridional skin friction and that the limiting streamlines are more closely oriented along the parallels. (Author)

AD-767 850/1GA Reprint
California Univ San Diego La Jolla Dept of Applied Mechanics and Engineering Sciences
THE STRUCTURE OF INTERNAL INTERMITTENCY IN TURBULENT FLOWS AT LARGE REYNOLDS NUMBER: EXPERIMENTS ON SCALE SIMILARITY,
C. W. Van Atta, and T. T. Yeh. 30 Mar 73, 23p
Contract DAHC04-72-C-0037, Grant NSF-GK-33799
Revision of report dated 5 Dec 72.
Availability: Pub. in the Jnl. of Fluid Mechanics, v59 pt3 p537-559 1973.

Descriptors: (*Turbulence, Structural properties), Scale, Statistical analysis, Probability density functions, Reynolds number, Kinetic energy, Dissipation factor, Mathematical models.
Identifiers: *Turbulent flow, Intermittent flow.

In a previous study certain quantities characteristic of the unaveraged fine structure of turbulence at large Reynolds numbers, including skewness, kurtosis and power spectra of the velocity derivative or its square, were calculated and their behaviour was compared with the predictions of the modified Kolmogorov theory. The present work directly complements and extends the results of this earlier study.

AD-767 880/8GA PC$5.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
ANALYTICAL STUDY OF BOUNDARY-LAYER GROWTH IN A DIVERGING CHANNEL.
Master's thesis,
Walter E. Berkshire, Jr. Jun 71, 58p Rept no. GA/AE/71-2

Descriptors: (*Boundary layer, Growth), (*Compressible flow, Statistical analysis), Viscosity, Walls, Equations of motion, Partial differential equations, Enthalpy, Skin friction, Laminar flow, Theses.
Identifiers: Viscous flow, Diverging channels, Finite difference theory, Nusselt number, Parabolic wall channels, Channel flow.

An analytical study of two-dimensional viscous compressible flow in diverging channels was made for a parabolic wall channel and a straight wall channel with varying initial centerline Mach numbers, degrees of wall divergence, and initial centerline-to-wall enthalpy ratios. The system of governing equations had been reduced to a mathematically parabolic system of nonlinear partial differential equations by means of slender channel approximations and an order of magnitude analysis. The governing equations were then solved using an implicit finite difference technique which reduced the problem to that of a set of simultaneous linear algebraic equations which were well suited for solution on a digital computer. Special case studies for air showed that the only profiles significantly by the parabolic wall channel were those of transverse velocity, pressure, and centerline Mach number. (Author)

AD-767 881/6GA PC$7.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
EXPERIMENTAL STUDY OF A LAMINAR BOUNDARY LAYER ON A BODY OF REVOLUTION.
Master's thesis,
George Robert Wilson. Mar 71, 97p Rept no. GAM/AE/71-4

Descriptors: (*Bodies of revolution, *Laminar boundary layer), (*Angle of attack, Fluid dynamic properties), Analysis of variance, Velocity, Pressure, Flow separation, Model tests, Wind tunnel models, Mathematical models, Anemometers, Flow visualization, Manometers, Theses.
Identifiers: Velocity profiles, Pressure distribution, Elliptical bodies, Hot wire anemometry.

The effects of angle of attack variation on the streamwise velocity profiles, the pressure distribution, and the separation point for a laminar boundary layer on the leeside centerline of an elliptical body of revolution were studied. On the leeside centerline for angles of attack greater than 12 deg the boundary layer velocity profiles behave in a dissimilar way to those of two dimensional flow and the pressure gradient deviates from the inviscid solution becoming favorable along the aft portion of the body. The separation initially moves forward on the centerline then moves aft for angles of attack greater than 3 deg. (Author)

AD-767 895/6GA PC$5.75/MF$1.45
Air Force Aero Propulsion Lab Wright-Patterson AFB Ohio
A THEORETICAL INVESTIGATION OF AXISYMMETRIC SUBSONIC DIFFUSER FLOW.
Technical rept. Jun 72-Apr 73,
Kervyn D. Mach. Jul 73, 71p Rept no. AFAPL-TR-73-40

Descriptors: (*Axially symmetric flow, *Diffusers), Subsonic flow, Viscosity, Partial differential equations, Difference equations, Integration, Numerical analysis, Computer programs.
Identifiers: Finite difference theory, AXILAX computer program, CDC 6600 computers.

A marching procedure for solving the finite difference equations describing inviscid, subsonic, compressible flow in an axisymmetric duct is described. The concept of artificial viscosity is introduced and special provisions for maintaining continuity are included. The method predicts the pressure and velocity distributions at any axial station in the duct. A computer program and several sample results are also presented and discussed. (Author)

AD-767 899/8GA PC$3.00/MF$1.45
Arnold Engineering Development Center Arnold Air Force Station Tenn
A METHOD FOR THE PREDICTION OF THE EFFECTS OF FREE-STREAM DISTURBANCES ON BOUNDARY-LAYER TRANSITION.
Final rept. Jan 72-Mar 73,
J. A. Benek, and M. D. High. Oct 73, 29p Rept no. AEDC-TR-73-158
Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-PWT-TR-73-88.

Descriptors: (*Boundary layer transition, Mathematical prediction), (*Conical bodies, *Transonic characteristics), Flow fields, Shear stresses, Laminar boundary layer, Turbulence, Mathematical models, Gas flow, Experimental data, Aerodynamic noise, Acoustic equipment, Perturbation theory.

A semiempirical expression for boundary-layer transition location is developed based on the concept of a critical ratio of inertial to viscous shearing stresses at laminar breakdown. Extensive comparisons between predicted and measured transition locations on a 10-deg included-angle cone at transonic speeds are shown with the data predicted to within 10%. Comparisons are also made with low subsonic and supersonic data which indicate the method is extendible to these flow regimes. (Author)

AD-767 900/4GA PC$3.50/MF$1.45
Arnold Engineering Development Center Arnold Air Force Station Tenn
WALL TEMPERATURE EFFECTS ON TWO- AND THREE-DIMENSIONAL TRANSONIC TURBULENT BOUNDARY LAYERS.
Final rept. Dec 72-Jul 73,
J. C. Adams, Jr., and A. W. Mayne, Jr. Oct 73, 71p Rept no. AEDC-TR-73-156
Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-73-100.

Descriptors: (*Turbulent boundary layer, *Wind tunnel models), Reynolds number, Transonic characteristics, Subsonic characteristics, Aerospace craft, Atmosphere entry, Temperature, Transonic airfoils, Programming(Computers), Flight, Recoverable booster motors, Rendezvous spacecraft, Two-dimensional flow, Three-dimensional flow, Yaw, Walls, Thermal properties.
Identifiers: HIRT flow, Space shuttles, Finite difference theory, High Reynolds number tunnel flow, Space transportation, Reusable spacecraft, Mixing length, Unsteady flow.

Wall temperature effects on two- and three-dimensional high Reynolds number turbulent boundary layers are examined for representative high Reynolds number tunnel (HIRT) conditions relative to flight; also considered are hot-wall conditions relative to space shuttle subsonic and transonic flight during earth entry. Results show significant influences of wall-to-stagnation temperature ratio on the location of boundary-layer separation and the friction drag coefficient. The study also indicates how rapid model wall temperature during a typical testing period of 2 to 10 sec may be undesirable for HIRT testing since unsteady aerodynamic phenomena can be influenced by rapidly changing turbulent boundary-layer wall temperature levels. (Modified author abstract)

AD-767 940/0GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
FLOW AND HEAT TRANSFER DURING THE INJECTION OF COOLANTS INTO A SUPERSONIC FLOW,
V. N. Kharchenko. 27 Sep 73, 9p Rept no. FTD-HT-23-35-74
Edited trans. of Akadeniya Navuk BSSR, Minsk. Institut Teplo- i Massoobmena. Trudy, v1 p296-300 1972, by Victor Mesenzeff.

Descriptors: (*Conical bodies, *Hypersonic flow), (*Coolants, Injection), Heat transfer, Flow fields, Aerodynamic slots, Air, Helium, Model tests, Flow visualization, Flow separation, USSR.
Identifiers: Translations.

Some information is presented on the results of an experimental study of the flow and heat transfer on the surface of sharp circular cones with 10 deg half-angle and base diameter of 80 mm with the injection of the air or helium through a slit along the smooth cone surface and also through slits or permeable sections established in circular recesses of varied length and depth. The tests were made at Mach number 5, stagnation temperature 250C, and stagnation pressure 8 bar.

AD-767 996/2GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
STUDY OF HEAT EXCHANGE ON A ROUGH FLATE,
V. N. Kryukov, and V. P. Solntsev. 18 Sep 73, 9p Rept no. FTD-HT-23-28-74
Edited trans. of Akademiya Navuk BSSR, Minsk. Institut Teplo- i Massoobmena. Trudy, v1 p57-61 1972, by Victor Mesenzeff.

Descriptors: (*Gas flow, Surface roughness), (*Heat transfer, Surface roughness), Flat plate models, Flow fields, Heat flux, Vortices, Model tests, Mathematical models, USSR.
Identifiers: Translations.

There are times in practice when one has to deal with flow past rough surfaces in the presence of heat exchange. However, relatively few works have been devoted to studying the effect of roughness on heat exchange with external flow. The aim of this study is to obtain and analyze data on heat exchange on a rough plate, under conditions when complete roughness is encountered as well as in the area of transitional conditions.

AD-768 197/6GA PC$3.00/MF$1.45
California Univ Los Angeles Dept of Mathematics
WAVE PROPAGATION IN CONTINUOUS RANDOM MEDIA,
Charles G. Lange. 1970, 34p
Contract N00014-69-A-02000-4022

Descriptors: (*Water waves, Statistical analysis), Stochastic processes, Partial differential equations, Integration.
Identifiers: Stochastic differential equations.

A study is made of the way in which small random inhomogeneities in a transmission medium affect the statistical properties of a system of waves. It is shown that provided the spectral cumulants are sufficiently smooth at some initial time, a sequence of closures for the zeroth order spectral functions can be deduced which describe asymptotically the transfer of energy between wave numbers. Of particular importance is the fact that the closure equations are derived without the need to resort to ad hoc statistical assumptions. The general theory is applied to the problem of the propagation of water waves over an irregular bottom topography. (Author)

AD-768 261/0GA Reprint
New York Univ N Y Courant Inst of Mathematical Sciences
ON THE SETTLING SPEED OF FREE AND FIXED SUSPENSIONS.
Scientific interim rept. no. 7,
Philip G. Saffman. 12 Dec 72, 15p
Contract N00014-67-A-0467-0027
Availability: Pub. in Studies in Applied Mathematics, v52 n2 p115-127 Jun 73.

Descriptors: (*Fluid flow, Particles), Equations of motion, Numerical analysis.
Identifiers: Settling, Settlers(Separators), Viscous flow.

Dilute suspensions of small spheres in a viscous fluid are examined for the three cases of; a regular periodic array, a random array of freely moving particles, and a random array in which the particles are held rigidly. It is known that the difference between average force and average velocity for a particle is a different function of concentration for the three cases. A unified analytical treatment is given for the point particle approximation, which explains the different qualitative dependence on concentration. It is shown that the differences between 1 and 2 are kinematical in nature, depending entirely on the difference between the geometries of regular and random arrays. The different result for case 3 is due to the shielding effect of a dilute suspension when the velocities, but not the forces, of the particles are fixed. (Author)

AD-768 296/6GA PC$2.75/MF$1.45
Naval Research Lab Washington D C
NONLINEAR DEVELOPMENT OF THE RAYLEIGH-TAYLOR INSTABILITY IN THE 'SHALLOW-WATER' APPROXIMATION.
Interim rept.,
D. L. Book, Edward Ott, and A. L. Sulton. Sep 73, 20p Rept no. NRL-MR-2642

Descriptors: (*Fluid flow, Stability), (*Shallow water, Theory), Gas flow, Water, Equations of motion, Nonlinear systems, Incompressible flow, Numerical methods and procedures, Problem solving.
Identifiers: Rayleigh Taylor instability.

The nonlinear evolution of the Rayleigh-Taylor instability in the long wavelength limit is investigated for an incompressible fluid supported against gravity (or inertial forces) by a massless fluid and bounded above by a rigid wall. Shallow water approximation permits a solution for the motion of the interface without reference to the detailed motion of fluid in the interior. (Modified author abstract)

AD-768 297/4GA PC$3.00/MF$1.45
Naval Ship Research and Development Center Bethesda Md
WALL SHEAR STRESS AND MEAN-VELOCITY MEASUREMENTS IN A THREE-DIMENSIONAL TURBULENT BOUNDARY LAYER,
John L. Power. Sep 73, 47p Rept no. NSRDC-4056

Descriptors: (*Ship hulls, *Drag), (*Turbulent boundary layer, *Hydrodynamics), Wind tunnel models, Model tests, Pressure, Pitot tubes, Skin friction, Mathematical prediction.
Identifiers: Velocity profiles, Pressure gradients.

A three-dimensional smooth wall turbulent boundary layer with a moderate adverse pressure gradient was produced on the floor of a wind tunnel. The boundary layer velocity profile was measured at two positions, using a three-tube pressure probe. The streamwise, skin-friction coefficient was calculated with the skin-friction laws of Granville and Ludwieg and Tillmann using experimentally obtained boundary layer parameters. The results were compared with skin-friction coefficients obtained by using Preston tubes. (Modified author abstract)

AD-768 316/2GA PC$4.50/MF$1.45
Advisory Group for Aerospace Research and Development Paris (France)
EFFECTS OF STREAMLINE CURVATURE ON TURBULENT FLOW.
AGARDograph rept.,
P. Bradshaw. Aug 73, 128p Rept no. AGARD-AG-169
NATO furnished.

Descriptors: (*Curved profiles, *Fluid dynamic properties), (*Turbulence, *Aerodynamic configurations), Equations of motion, Shear stresses, Pressure, Heat transfer, Boundary layer, Mathematical models, Coanda effect.
Identifiers: Shear flow, Streamline curvature.

Streamline curvature in the plane of the mean shear produces large changes in the turbulence structure of shear layers, usually an order of magnitude more important than normal pressure gradients and other terms in the mean-motion equations for curved flows. The effects on momentum and heat transfer in boundary layers are noticeable on typical wing sections and are very important on highly-cambered turbomachine blades: turbulence may be nearly eliminated on highly-convex surfaces, while on highly-concave surfaces momentum transfer by quasi-steady longitudinal vortices dominates the ordinary turbulence processes. The greatly enhanced mixing rates of swirling jets and the characteristic nonturbulent cores of trailing vortices are also consequences of the effects of streamline curvature on the turbulence structure. A progress report, comprises a review of current knowledge, a discussion of methods of predicting curvature effects, and a presentation of principles for the guidance of future workers.

AD-768 340/2GA PC$3.50/MF$1.45
Arnold Engineering Development Center Arnold Air Force Station Tenn
CALCULATION OF THE BOUNDARY-LAYER FLOW IN THE WINDWARD SYMMETRY PLANE OF A SPHERICALLY BLUNTED AXISYMMETRIC BODY AT ANGLE OF ATTACK, INCLUDING STREAMLINE-SWALLOWING EFFECTS.
Final rept. Sep 71-Dec 72,
Arloe W. Mayne, Jr. Oct 73, 56p Rept no. AEDC-TR-73-166
Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-73-102.

Descriptors: (*Blunt bodies, *Boundary layer), (*Axially symmetric flow, Equations of motion), (*Hypersonic flow, Angle of attack), Compressible flow, Vortices, Numerical methods and procedures, Laminar flow, Turbulence, Hemispherical shells, Three-dimensional flow.
Identifiers: Windward symmetry plane, Streamline swallowing.

Three-dimensional compressible boundary-layer equations are particularized to the windward symmetry plane of a spherically blunted axisymmetric body at incidence under hypersonic conditions. Through the use eddy transport and streamwise intermittency both transitional and fully turbulent boundary layers may be treated. A scheme is presented for determining the outer-edge boundary conditions based on a mass flow balance treatment of the boundary-layer entrainment of the inviscid flow. A finite-difference technique is described for solving the set of partial differential equation governing the boundary-layer flow, and for treating the streamline-swallowing phenomenon.

COM-73-11502/4GA PC$3.25/MF$1.45
Wisconsin Univ., Madison. Dept. of Civil Engineering.
A HIGHER ORDER THEORY FOR SYMMETRICAL GRAVITY WAVES,
Peter L. Monkmeyer. Dec 70, 22p WIS-SG-71-303 NOAA-73070202
Pub. in Proceedings of the Conference on Coastal Engineering (12th), Washington, D. C. Sep 70, 21p.

Descriptors: (*Gravity waves, Potential theory), Incompressible flow, Partial differential equations, Complex variables, Numerical integration, Ocean waves.
Identifiers: Sea Grant program.

A higher order theory is presented for symmetrical, non-linear gravity waves. As a consequence of the generality employed, the theory includes the full range of possible wave lengths, water depths and wave heights that may be encountered, and brings them into one unified formulation. Thus, the theory encompasses both linear and non-linear waves, including Airy waves, Stokes waves, cnoidal waves and the solitary wave. Based on the work of Nekrasov, a complex potential in the form of an infinite series is developed to describe the flow field. The potential satisfies the bottom (horizontal) condition as well as the kinematic surface condition exactly. Furthermore, the dynamic surface condition is satisfied by numerical calculation of the series coefficients which appear in the complex potential. The calculation of these coefficients is accomplished by solving a set of non-linear algebraic equations, with the aid of a Newton-Raphson iteration procedure and matrix inversion. (Modified author abstract)

COM-73-11654/3GA PC$3.00/MF$1.45
California Univ., San Diego, La Jolla. Inst. of Marine Resources.
DIFFRACTION OF WATER WAVES BY A SUBMERGED CIRCULAR CYLINDER,
Hin Chiu. Jul 73, 40p UC-IMR-74-2, Sea Grant Pub-5 NOAA-73090504
Contract NOAA-2-35208
Also pub. as California Univ., Berkeley, Coll. of Engineering. Rept. no. NA-73-4.

Descriptors: (*Cylindrical bodies, *Hydrodynamics), (*Water waves, Diffraction), Underwater structures, Potential theory, Phase angle, Kinetic energy, Excitation, Force, Test equipment, Dynamic tests, Dynamometers, Data processing, Reflection, Wave propagation.
Identifiers: *Submerged bodies, Sea Grant program, Harmonic waves.

The author discusses the physical phenomenon which occurs when a train of regular harmonic waves passes over a submerged circular cylinder. A discrepancy between the theoretical and experimental results is found when the cylinder is close to the water surface. The linearized potential theory gives a good description of the phenomenon in case the cylinder is well submerged. The phase angle between the incident waves and transmitted waves is found to be very sensitive with respect to the change of incident-wave slope. This effect may be related to the change of the proportion of the energy propagation that passed over the top and below the cylinder. A further study of this effect is recommended.

COM-73-11674/1GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
DRAG REDUCING FLUIDS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1969-Sep 73,
Edward J. Lehmann. Oct 73, 120p* NTIS-WIN-73-046
Supersedes NTIS-PK-17.

Descriptors: (*Drag, Reduction), (*Bibliographies, Drag), (*Nonnewtonian fluids, Bibliographies), Polymers, Solutions, Skin friction, Pipe flow, Theories, Turbulent flow, Rheology.
Identifiers: *Drag reducing fluids.

The NTISearch bibliography contains 115 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. All aspects of drag reducing and nonnewtonian fluids are presented. This includes theory, chemical formulations, and applications. (Author)

CONF-730903-1/GA PC$3.50/MF$1.45
Argonne National Lab., Ill.
CROSSFLOW-INDUCED VIBRATION OF A CIRCULAR CYLINDER IN WATER.
H. Halle. Dec 72, 26p

Descriptors: (*Water, *Fluid mechanics), (*Cylinders, *Mechanical vibrations), Disturbances, Elasticity, Velocity.

For abstract, see NSA 28 06, number 15133.

N73-29177/5GA PC$5.00/MF$1.45
Alberta Univ., Edmonton. Dept. of Mechanical Engineering.
HYPERSONIC FLOW WITH VISCOUS INTERACTION OVER A SHARP SLENDER WEDGE.
C. M. Rodkiewicz. 30 Aug 73, 59p
Subm-Backup Document for Aiaa Synoptic Scheduled for Publication in the Aiaa Journal in Jan. 1974.

Descriptors: *Finite difference theory, *Flow characteristics, *Hypersonic flow, *Viscous flow, *Wedge flow, Data acquisition, Flow equations, Numerical analysis.

For abstract, see STAR 1120

N73-29178/3GA PC$5.25/MF$1.45
McGill Univ., Montreal (Quebec).
VIBRATION OF TUBES CONTAINING FLOWING FLUID.
M. P. Paidoussis. Aug 72, 63p MERL-TN-72-2
Contract NRC-A-4366

Descriptors: *Fluid flow, *Hydroelasticity, *Pipe flow, *Steady flow, *Unsteady flow, *Vibration effects, Flow equations, Numerical analysis, Pressure gradients, Structural analysis.

For abstract, see STAR 1120

N73-29179/1GA PC$3.50/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
DECAY OF FAR FLOW FIELD IN TRAILING VORTICES.
B. S. Baldwin, N. A. Chigier, and Y. S. Sheaffer. 28 Jun 73, 27p NASA-TM-X-69495
Subm-Backup Document for Aiaa Synoptic Scheduled for Publication in the Aiaa Journal in Dec. 1973.

Descriptors: *Boundary layer flow, *Finite difference theory, *Flow characteristics, *Gas flow, *Turbulent wakes, *Vortices, Flow equations, Flow geometry, Numerical analysis.

For abstract, see STAR 1120

N73-29180/9GA PC$3.00/MF$1.45
Techtran Corp., Silver Spring, Md.
EXPERIMENTAL INVESTIGATION OF FLOW STABILITY DURING INTENSE INJECTION.
A. L. Yermakov, V. M. Yeroshenko, A. A. Klimov, V. P. Motulevich, and Y. N. Terentyev. Jul 73, 17p NASA-TT-F-14945
Contract NASW-2485
Tran-Transl. Into English from Izv. Akad. Nauk Sssr, Mekh. Zhidk. Gaza (Ussr), No. 6, Nov.-Dec. 1972 p 114-123.

Descriptors: *Anemometers, *Boundary layer flow, *Flow characteristics, *Laser modes, Air flow, Flow stability, Turbulent flow, Wind tunnel tests.

For abstract, see STAR 1120

ORNL-TM-4123/GA PC$4.25/MF$1.45
Oak Ridge National Lab., Tenn.
MODEL FOR TWO-PHASE FLOW IN WATER.
F. H. Clark. Jun 73, 41p
Contract W-7405-eng-26

Descriptors: (*Two-phase flow, *Mathematical models), (*Pwr type reactors, *Loss of coolant), (*Bwr type reactors, Loss of coolant), Blowdown, Steam, Water.

For abstract, see NSA 28 04, number 08090.

TUBIK-26/GA PC$7.25/MF$1.45
Technische Universitaet, Berlin (West Germany). Institut fuer Kerntechnik.
COMPARATIVE COMPILATION OF RESULTS AND SOLUTIONS TO THERMAL-FLUID-DYNAMIC PROBLEMS IN ECCENTRIC ANNULI.
L. Wolf. Mar 73, 104p
In German. U.S. Sales Only.

Descriptors: (*Laminar flow, *Heat transfer), (*Turbulent flow, Heat transfer), (*Liquid metals, Heat transfer), Annular space, Configuration, Energy transfer, Fuel element clusters, Fuel rods, Hydrodynamics, Mathematical models, Numerical solution.

For abstract, see NSA 28 04, number 08092.

20E. Masers and Lasers

AD-767 736/2GA Reprint
Illinois Univ Urbana Dept of Electrical Engineering
ELECTRON EXCITATION EFFICIENCY OF CARBON DIOXIDE LASERS,
D. R. Suhre, P. D. Coleman, and T. A. DeTemple. 15 Jan 73, 4p AFOSR-TR-73-1662
Grant AF-AFOSR-2154-72
Availability: Pub. in the Jnl. of Applied Physics, v44 n6 p2923-2924 Jun 73.

Descriptors: (*Carbon dioxide, Excitation), (*Gas lasers, Efficiency), Molecular energy levels, Irasers.
Identifiers: Molecular vibration, *Carbon dioxide lasers.

Using a double-excitation-pulse technique, the measured relative excitation efficiency of a CO2 laser was found to be in qualitative agreement with the theoretical calculation of Nighan for the v3 mode. (Modified author abstract)

AD-767 921/0GA PC$3.50/MF$1.45
Naval Research Lab Washington D C
ARPA-NRL LASER PROGRAM.
Semiannual technical rept. 1 Jul-31 Dec 72.
Jun 73, 68p Rept no. NRL-MR-2634
ARPA Order-2062
See also report dated Nov 72, AD-754 410.

Descriptors: (*Lasers, Scientific research), Gas lasers, Irasers, Deuterated compounds, Fluorides, Carbon dioxide, Supersonic flow, Carbon monoxide, Optical glass, Neodymium.
Identifiers: *Chemical lasers, Deuterium fluoride lasers, *Carbon dioxide lasers, Carbon monoxide lasers, *Glass lasers, Neodymium glass lasers, Nitrogen oxide lasers.

The ARPA-NRL high energy laser program is concerned with the development of laser technology in four program areas; Chemical Lasers, Electric Discharge Lasers; High Power Glass Laser Techniques. The Chemical Laser Program has consisted of primarily two experiments; the development of a DF-CO2 supersonic transfer laser, and the study of the CO vibrational distribution from the reaction O + CS. Assembly of the amplifier chain of the short pulse CO2 laser system has continued. Under the New Laser Techniques Program a pulsed OD-CO2 transfer laser has been operated for the first time. The High Power Glass Laser is operating reliably and over 2000 shots have been fired during the last reporting period. This has permitted statistics to be compiled on the laser's performance and initial laser-target interaction experiments to be carried out. (Modified author abstract)

AD-767 968/1GA PC$3.50/MF$1.45
Minnesota Univ Minneapolis Dept of Electrical Engineering
THEORY OF SELF-LOCKING OF LASERS WITH INHOMOGENEOUSLY BROADENED LINES.
Technical rept.,
R. J. Collins, and T. S. Chen. Aug 73, 51p Rept no. TR-73-03
Contract N00014-68-A-0141-0002

Descriptors: (*Gas lasers, Light pulses), Theory, Atomic energy levels, Field theory, Frequency shift, Mathematical models.
Identifiers: *Helium neon lasers, *Helium cadmium lasers, *Mode locked lasers, Lamb shift.

A theoretical model is given to describe self-locking. The semi-classical theory of Lamb for laser action has been modified to include the collisional effects on linewidth and on the nonlinear polarization. The collisional effects were included by a classical atom-atom rate. The results modify Lamb's equation for the frequencies and phases of oscillating modes. The criterion of self-locking of modes is expressed in terms of ratio of loss to unsaturated gain. Comparisons of the theoretical results and published experimental results for He-Ne and He-Cd are satisfactory. (Author)

AD-767 969/9GA PC$4.50/MF$1.45
Minnesota Univ Minneapolis Dept of Electrical Engineering
SELF-MODE LOCKING IN INHOMOGENEOUSLY-BROADENED CW LASERS.
Technical rept.,
Gerald R. Willenbring. Aug 73, 143p Rept no. TR-73-04
Contract N00014-68-A-0141-0002

Descriptors: (*Gas lasers, Light pulses), Atomic energy levels, Electron transitions, Polarization, Phase shift, Gain.
Identifiers: *Mode locked lasers, Continuous wave lasers, *Helium neon lasers, *Helium cadmium lasers, Ring lasers.

An experimental and theoretical discussion of self-mode locking in multimode CW gas lasers is presented. The average saturated gain profile is assumed to be nearly flat in the frequency range of the oscillating modes because the homogeneous pressure-broadened linewidth is larger than the intermode frequency spacing. For He-Ne and He-Cd(+) lasers the gain fluctuations which occur as the pulses propagate through the active medium are believed to be small since the pulse velocity has been found to be approximately the same as the group velocity associated with the average dispersion. Estimates of the recovery time for the inversion density in a He-Ne laser indicate that the gain variations are a few percent of the average gain. An experimental technique for measuring the mode phases was developed, and measurements were made on a self-locked He-Ne laser with about seven modes. The results show that the modes are not in phase, and that, for the particular laser used, one mode toward the high-frequency end of the spectrum is lagging the others in phase by about 40 degrees. (Author)

AD-768 234/7GA Not available NTIS
Defence Standards Labs Maribyrnong (Australia)
TEMPERATURE IN AN IRRADIATED THERMALLY CONDUCTING TRANSLUCENT MEDIUM,
B. C. H. Wendlandt. 2 Oct 72, 4p
Availability: Pub. in Jnl. of Physics D: Applied Physics, v6 p657-660 1973.

Descriptors: (*Coherent radiation, Heat transfer), (*Materials, Heating), Temperature, Distribution functions, Green's function.
Identifiers: *Laser beams, *Laser heating.

An expression is derived for the temperature distribution in a semi-infinite translucent medium irradiated by a spatially uniform but time-varying pulse. When the pulse decays exponentially (as, for example, in the case of radiation from a pulsed laser), the temperature is expressed as a sum of complex error functions for which there exist rational approximations that are convenient for computing. The calculations are based on classical theory, and no resonant absorption is considered. (Author)

AD-768 303/0GA PC$3.00/MF$1.45
National Bureau of Standards Washington D C Inst for Materials Research
LASER DAMAGE IN MATERIALS.
Semi-annual technical rept., 1 Feb-31 Jul 73,
Albert Feldman, Deane Horowitz, and Roy M. Waxler. Aug 73, 44p Rept no. NBSIR-73-268
ARPA Order-2016

Descriptors: (*Coherent radiation, Focusing), (*Optical equipment components, *Radiation damage), Lasers, Optical materials, Ceramic materials, Glass, Lithium compounds, Niobates, Potassium compounds, Hydrogen compounds, Phosphates, Deuterated compounds, Yttrium compounds, Aluminates, Oxides, Electrostriction, Thermal properties, Magneto-optic effect, Electrooptics.
Identifiers: Neodymium glass lasers, *Laser materials, Self focusing, Kerr electrooptic effect, Kerr magnetooptic effect, YAG lasers, Lithium niobates, Potassium dihydrogen phosphate, Yttrium aluminum garnets, Yttrium oxides, Yttralox ceramic.

Neodymium:glass laser induced damage is observed in lithium niobate (LiNbO3), calcite (CaCO3), potassium dihydrogen phosphate (KDP), and deuterated potassium dihydrogen phosphate (KD*P). The damage at the lowest power levels is caused by inclusions. At higher power levels, filamentary damage, which is indicative of self-focusing, is observed in LiNbO3. An analysis of self-focusing data in yttrium aluminum garnet shows that the Kerr effect is the dominant self-focusing mechanism, with some contribution from the thermal effect. Bulk and surface damage thresholds in neodymium-doped thoria:yttrium oxide ceramic are obtained relative to bulk damage thresholds in several optical materials. For solid materials relationships are obtained between the stress-optic coefficients and the electrostrictive coefficients under different geometric boundary conditions. (Author)

AD-768 321/2GA PC$2.75/MF$1.45
Ford Motor Co Dearborn Mich
WAVEGUIDE EXPERIMENTS IN PBTE THIN FILMS AND THE TUNING CHARACTER OF PBTE DIODE LASERS.
Quarterly technical rept. no. 2, 1 Jul-30 Sep 73,
S. L. McCarthy, W. H. Weber, M. Mikkor, and K. F. Young. 31 Oct 73, 23p
Contract N00014-63-C-0289, ARPA Order-2327
See also Quarterly technical rept. no. 1, AD-763 757.

Descriptors: (*Lasers, *Photodiodes), (*Irasers, Semiconducting films), Diodes(Semiconductor), Lead compounds, Tellurides, Waveguides, Electrooptics.
Identifiers: *Lead tellurides, Light emitting diodes, Optical waveguides, Thin films, *Injection lasers, *Semiconductor lasers.

Grating couplers have been fabricated in thin-film PbTe waveguides on BaF2 substrates. The grating spacings are between 1.8 and 2.1 micrometers, which is the appropriate range for coupling into the low order modes of a high index film (n = 5-6) with a 10.6 micrometer CO2 laser. The gratings are first formed in a photoresist layer on the film using holographic or mask exposure. The pattern is then transferred to the PbTe by etching in a dilute bromic acid and bromine solution. The last step is essential for obtaining high coupling efficiencies. Due to the high index of the film, efficient coupling cannot be achieved with a low index photoresist layer alone. Coupling efficiencies are estimated to be approximately 10%. Tuning characteristics of a number of PbTe thin-film lasers are measured. Tuning rates are typically 1.5-0.15 GHz/mA depending on diode resistance and thermal impedance. The maximum tuning range observed in a single mode was 70 GHz. (Author)

AD-768 331/1GA PC$10.25/MF$1.45
Air Force Weapons Lab Kirtland AFB N Mex
ANTIREFLECTION COATING DESIGNS FOR 10.6-MICRON WINDOW MATERIALS.
Technical rept. 1 Jan-1 Jul 72,
John S. Loomis. Jan 73, 164p Rept no. AFWL-TR-72-180

Descriptors: (*Gas lasers, Infrared windows), (*Irasers, Infrared optical materials), (*Infrared windows, Optical coatings), Potassium compounds, Chlorides, Zinc compounds, Selenides, Cadmium compounds, Tellurides, Germanium, Films, Optical properties.
Identifiers: *Carbon dioxide lasers, Laser materials, *Antireflection coatings, Potassium chloride, Zinc selenides, Cadmium tellurides, Thin films.

The theory of two-layer, antireflection coatings is presented with special emphasis on the absorption in the coating and the effect of thickness variations on the reflectivity and transmitted phase front. Coating designs for 10.6-micron window materials (potassium chloride, zinc selenide, cadmium telluride, and germanium) are systematically cataloged. (Author)

AD-768 338/6GA PC$2.75/MF$1.45
Aerospace Corp El Segundo Calif Lab Operations
CO2 LASER-PUMPED FAR INFRARED (FIR) WAVEGUIDE LASER.
Rept. for Nov 72-Mar 73,
Dean T. Hodges, Jr., and Thomas S. Hartwick. 15 Sep 73, 14p Rept no. TR-0074(9230-01)-3 SAMSO-TR-73-331
Contract F04701-73-C-0074

Descriptors: (*Irasers, Methanols), (*Gas lasers, Pumping(Optical)), Design.
Identifiers: Far infrared radiation, Carbon dioxide lasers, Methyl alcohol.

Using a hollow waveguide resonator, laser operation in the far infrared (FIR) has been observed on several transitions between 40 micrometers and 200 micrometers from methyl alcohol excited by the resonant absorption of CO2 pump laser lines. The preliminary performance characteristics of FIR waveguide lasers constructed from both metallic and dielectric tubes are discussed. For CO2 pump powers of a few watts, cw output power at the milliwatt level in the FIR waveguide lasers constructed from both metallic and dielectric tubes are discussed. For CO2 pump powers of a few watts, cw output power at the milliwatt level in the FIR was observed from waveguide laser structures only a small fraction of the size of conventional FIR laser resonators. (Author)

COM-73-11579/2GA PC$20.00/MF$2.00
National Technical Information Service, Springfield, Va.
DYE LASERS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Elizabeth A. Harrison. Oct 73, 81p* NTIS-WIN-73-037
Supersedes NTIS-PK-15.

Descriptors: (*Lasers, *Bibliographies), Theory, Electron transitions, Dyes, Design.
Identifiers: *Organic dye lasers, Tunable lasers, Xanthene dyes, Rhodamine dyes.

The NTISearch bibliography contains 76 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The bibliography is intended as a selection of the

government research from 1964 through September 1973 on dye lasers. Included are topics on theory, design, and applications. (Author)

COM-73-11713/7GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
RADIATION DAMAGE OF LASER MATERIALS. A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Edward J. Lehmann. Oct 73, 93p* NTIS-WIN-73-063

Descriptors: (*Laser materials, *Radiation damage), (*Bibliographies, Laser materials), Infrared windows, Infrared lasers, Mirrors, Laser beams, Electrostriction, Focusing, Optical materials.
Identifiers: Self focusing.

The NTISearch bibliography contains 88 selected abstracts of research reports using the NTIS on-line search system--NTISearch. The abstracts cover topics of interest to those studying laser beam damage to such laser materials as optical glass, alkali halides, mirror surfaces, and matrix substances. (Author)

COM-73-11719/4GA PC$20.00/MF$20.00
National Technical Information Service, Springfield, Va.
LIGHT DETECTION AND RANGING (LIDAR). A BIBLIOGRAPHY WITH ABSTRACTS.
Rept. for 1964-Sep 73,
Edward J. Lehmann. Oct 73, 112p* NTIS-WIN-73-069
Supersedes NTIS-PK-12.

Descriptors: (*Optical radar, *Bibliographies), Air pollution, Remote sensing, Raman spectra, Rangefinding, Light scattering, Aerosols, Aircraft landings, Atmospheric sounding, Lasers, Infrared detectors, Infrared lasers, Design, Optical tracking.
Identifiers: Air pollution detection, Laser spectroscopy.

The NTISearch bibliography contains 105 selected abstracts of research reports retrieved using the NTIS on-line search system--NTISearch. The abstracts are divided into two sections. In the first, the design and theory of LIDAR is discussed. The second section presents topics on LIDAR applications such as aircraft landing visibility, atmospheric sounding, air pollution detection, and tracking. (Author)

IPP-4/106/GA PC$4.25/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
ACTIVELY MODE-LOCKED TEA--CO SUB 2 - LASER WIH PULSE SELECTING SYSTEM.
H. Baumhacker, E. Fill, and F. Hofmeister. Nov 72, 42p
In German. U.S. Sales Only.

Descriptors: (*Lasers, *Carbon dioxide), Operation, Pulses.

For abstract, see NSA 28 04, number 10569.

JUL-905-FF/GA PC$6.25/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Institut fuer Festkoerperforschung.
NONEQUILIBRIUM PHASE TRANSITION IN AN EXACTLY SOLUBLE LASER MODEL.
V. Dohm. Dec 72, 83p
In German. U.S. Sales Only.

Descriptors: Lasers, Mathematical models, Phase transformations, Simulators.

For abstract, see NSA 28 04, number 10579.

LA-UR-73-671/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
SELF FOCUSING OF VERY POWERFUL LASER BEAMS.
B. R. Suydam. 9p CONF-730528-3
Contract W-7405-eng-36

Descriptors: (*Laser radiation, *Focusing), (*Amplifiers, *Gain), Instability, Lasers, Neodymium.

For abstract, see NSA 28 06, number 15144.

LA-UR-73-701/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
SHORT PULSE AMPLIFICATION AND ROTATIONAL RELAXATION IN CO SUB 2 AMPLIFIERS.
G. T. Schappert. 1973, 5p CONF-730515-3
Contract W-7405-eng-36

Descriptors: (*Lasers, *Pulse amplifiers), Carbon dioxide, Low pressure, Relaxation, Rotation.

For abstract, see NSA 28 04, number 10587.

LA-5243-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
FRESNEL DIFFRACTION EFFECTS IN THE DESIGN OF HIGH-POWER LASER SYSTEMS.
A. J. Campillo, J. E. Pearson, S. L. Shapiro, and N. J. Jr. Terrell. Apr 73, 4p
Contract W-7405-eng-36

Descriptors: (*Lasers, *Fresnel coefficient), (*Amplifiers, Lasers), Laser radiation, Planning.

For abstract, see NSA 28 05, number 12564.

N73-29475/3GA PC$3.00/MF$1.45
Defence Research Establishment Valcartier (Quebec).
HIGH REPETITION RATE CHEMICAL LASER.
T. V. Jacobson, G. H. Kimbell, A. R. Lambert, and D. R. Snelling. May 73, 9p DREV-TN-2060/73
Contract DREV PROJ. 95-10-68

Descriptors: *Chemical lasers, *Continuous wave lasers, *Laser outputs, Flux density, Hydrofluoric acid, Performance.

For abstract, see STAR 1120

N73-29477/9GA PC$3.00/MF$1.45
Defence Standards Labs., Maribyrnong (Australia).
ELECTRON DRIFT VELOCITY AND CHARACTERISTIC ENERGY IN CARBON-DIOXIDE LASER GAS MIXTURES.
R. K. Garnsworthy. Jan 73, 19p TN-280

Descriptors: *Carbon dioxide lasers, *Electric fields, Boltzmann transport equation, Free electrons, Gas mixtures, Momentum.

For abstract, see STAR 1120

N73-29478/7GA PC$3.00/MF$1.45
Australian National Univ., Canberra. Dept. of Engineering Physics.
RESULTS OF PRELIMINARY TESTS ON SECTIONS OF A DISK LASER AMPLIFIER FOR A 44 MM DIAMETER BEAM.
E. K. Inall. Apr 73, 15p EP-RR-35

Descriptors: *Beams (Radiation), *Coherent radiation, *Laser modes, *Laser outputs, Coherent light, Equipment specifications, Light amplifiers, Optical properties.

For abstract, see STAR 1120

N73-29479/5GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
A NEW METHOD FOR UPCONVERSION OF MONOCHROMATIC RADIATION.
H. C. Volkin. Aug 73, 8p NASA-TM-X-2877, E-7571

Descriptors: *Monochromatic radiation, *Parametric frequency converters, Emission, Raman spectra.

For abstract, see STAR 1120

N73-29480/3GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
COLD CATHODES FOR SEALED OFF CO2 LASERS.
U. E. Hochuli, T. P. Sciacca, and C. R. Hurt. Aug 73, 60p NASA-TN-D-7307, G-7332

Descriptors: *Carbon dioxide lasers, *Cold cathodes, *Laser materials, Gas discharge tubes, Gas mixtures, Service life.

For abstract, see STAR 1120

SLA-73-347/GA PC$5.25/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
VARIATIONS IN THE BEAM CHARACTERISTICS OF A LIDAR SYSTEM.
M. J. Landry. May 73, 65p

Descriptors: (*Laser radiation, *Beam production), Earth atmosphere, Energy, Neodymium, Ruby.

For abstract, see NSA 28 04, number 10618.

SLA-73-5285/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
1730 A LASER TERMINATING ON A DISSOCIATING LEVEL.
A. W. Johnson, and J. B. Gerardo. 4p CONF-730906-4

Descriptors: (*Xenon, *Laser radiation), Emission spectra, Energy levels, Energy-level transitions, Lasers.

For abstract, see NSA 28 06, number 15164.

UCID-16181/GA PC$3.25/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
SUGGESTIONS FOR IMPROVING CO SUB 2 MODE-LOCKED OSCILLATORS.
D. T. Davis. 3 Jan 73, 25p
Contract W-7405-eng-48

Descriptors: (*Lasers, *Oscillators), Brightness, Carbon dioxide, Reliability.

For abstract, see NSA 28 05, number 12590.

UCRL-74397/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
GENERATION OF SINGLE 1-NS PULSES AT 10.6 MU WITHOUT MODE LOCKING.
D. L. Smith, and D. T. Davis. 26 Jan 73, 9p CONF-730515-2

Descriptors: (*Lasers, *Pulses), (*Oscillators, Lasers), Carbon dioxide, Laser radiation.

For abstract, see NSA 28 05, number 12594.

UCRL-74744/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.

RATIONAL DEFINITION OF INDEX NONLINEARITY IN SELF FOCUSING MEDIA.
A. J. Glass. 11 May 73, 9p CONF-730528-1

Descriptors: (*Laser radiation, *Focusing), Defects, Lasers, Nonlinear problems.

For abstract, see NSA 28 06, number 15170.

20F. Optics

AD-767 788/3GA Not available NTIS
Defence Research Establishment Valcartier Quebec
DIFFRACTION EFFECTS ENCOUNTERED IN THE MEASUREMENT OF BIDIRECTIONAL REFLECTANCE FROM SQUARE PYRAMID,
Fred A. Christie, and Andre B. DeVriendt. 1973, 10p
Prepared in cooperation with Laval Univ., Quebec.
Availability: Pub. in the Proceedings of the AIAA Aerospace Sciences Meeting (11th), Washington, D. C. 10-12 Jan 73. AIAA Paper No. 73-150.

Descriptors: (*Surfaces, Reflectivity), Coherent radiation, Reflection, Surface properties, Canada.
Identifiers: Helium neon lasers, Laser beams.

Theoretically and photographically determined bidirectional reflectance data are presented for a set of sixteen regularly rough surfaces composed of square pyramids which were illuminated by a He-Ne laser beam. The included angles of the ruled V-grooves were 60, 90, 120 and 150 degrees, while the peak-to-valley depths were 2.5, 5, 10 and 20 microns. The photographs grapically illustrate a smooth transition from reflectance patterns predicted by diffraction theory to others described by conventional bidirectional reflectance theory. Although precise measurement is difficult in some diffuse patterns, agreement between the theoretical and photographic data was generally one degree or less. (Author)

AD-768 201/6GA PC$3.00/MF$1.45
Washington Univ Seattle Dept of Electrical Engineering
HOLOGRAPHICALLY GENERATED LENSES.
Technical rept.,
Andreas Richter, and F. Paul Carlson. Sep 73, 34p* Rept no. UW-TR-167
Contract N00014-67-A-0103-0024

Descriptors: (*Lenses, Design), Optical properties, Light transmission, Coherent radiation, Monochromatic light, Diffraction, Distortion, Phase shift, Integral transforms, Fourier analysis, Efficiency.
Identifiers: *Holographic lenses, *Holography, Ray tracing, Optical data processing, Fourier transformation.

A holographic lens has been made which uses earlier work on holographic aberration correction. The lens properties are obtained by interferometrically recording a plane wave and a pinhole spherical wave. The lens was tested by means of the methods of the Ronchi lens test, the Fourier transformation of gratings and imaging of test pictures. The results are presented. (Author)

COM-73-11518/0GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Wave Propagation Lab.
ANALYTICAL REPRESENTATION FOR STANDARDS OF SPECTRAL IRRADIANCE OVER THE 300-1200 NM RANGE,
R. L. Schwiesow. 15 Feb 72, 3p NOAA-73080907
Pub. in Applied Optics, v12 n5 p929-930 May 73.

Descriptors: (*Irradiance, Standards), Spectral emittance, Wavelengths, Calibrating, Spectroradiometers.

The note presents results related to an analytic expression for spectral irradiance as a function of wavelength. Such an analytical representation would be particularly useful for reference calibration data in automating data processing of spectroradiometric experimental results.

PAT-APPL-311234/GA PC$3.50/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
SINGLE REFLECTOR INTERFERENCE SPECTROMETER AND DRIVE SYSTEM THEREFOR.
Patent Application.
R. A. Schindler. Filed 1 Dec 72, 28p NASA-CASE-NPO-11932-1,
Contract NAS7-100
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Optical equipment, *Optical measurement, *Spectral reflectance, *Spectrometers, Equipment specifications, Patent applications, Product development, Test equipment.

The development and characteristics of a single reflector interference spectrometer and associated drive system are discussed. The interferometer uses a double pass retroreflector in which a single mirror is placed in the path of both split beams of an incoming ray to cause them to double back through separate retroreflectors and recombine. Changes in optical path length difference are achieved by using a motor coil driven lead for smaller mid-frequency changes and piezoelectric actuators for small, high-frequency changes.

PATENT-3 714 430/GA Not available NTIS
Department of the Navy Washington D C
PHOTOELEMENT INTENSE RADIATION PROTECTIVE DEVICE.
Patent,
Rodger C. Finvoid, and Charles M. Davis. Filed 19 May 67, patented 30 Jan 73, 5p Rept nos. PAT-APPL-642 650,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D.C. 20231 $0.50.

Descriptors: (*Optical filters, *Patents), (*Radiation measurement systems, Protection), Semiconductors, Lenses, Gallium arsenides.
Identifiers: PAT-CL-250-83-3-H.

The patent describes an optical detector protective device for a radiation detecting system. It consists of a filter of direct-band-gap emitting semiconductor material, which has an extremely steep absorption edge as compared to indirect band-gap materials and a spectral filter for passing desired bandwidth. The absorption edge of the direct-band-gap filter is adjacent to its emitting line and positioned such as to pass the desired emission line at ordinary temperatures and attenuate the emission line at elevated temperatures. The device prevents deterioration of the detector in the presence of high intensity light sources in cases where monochromatic or near monochromatic light is employed. The absorption coefficient of the device varies greatly with temperature and wave length.

PATENT-3 721 500/GA Not available NTIS
Department of the Navy, Washington D.C.
INSTRUMENT FOR MEASURING THE DEPOLARIZATION OF BACKSCATTERED LIGHT.
Patent,
Ronald Bruce. Filed 6 Aug 71, patented 20 Mar 73, 7p Rept nos. PAT-APPL-169 715,
Government-owned invention available for licensing. Copy of patent available Commissioner of Patents, Washington, D. C. 20231 $0.50.

Descriptors: (*Underwater lights, *Patents), (*Underwater object locators, Lighting equipment), Underwater light, Polarization, Backscattering, Optical filters, Sea water.
Identifiers: PAT-CL-356-118, Helium neon lasers.

The patent describes an instrument capable of obtainint information on the polarization properties of ocean waters. Operation of the instrument is as follows: Light from a He-Ne laser passes through a rotating beam chopper, a rotating linear polarizer, and a light guide and an aperture (to block spurious reflections) into the scattering medium, generally seawater. A portion of the backscattered light is intercepted by an analyzer-detector module, and after amplification the detector output is displayed on an oscilloscope. The beam is chopped at 20 times the rotational frequency of the polarizer. This provides an a-c backscatter signal which is independent of detector drift and changes in background illumination, if detector ssaturation is avoided.

USC-113-P-19-37/GA PC$3.00/MF$1.45
University of Southern California, Los Angeles. Dept. Of Electrical Engineering.
INVARIANT IMBEDDING AND CHANDRASTEKHAR'S PLANETARY PROBLEM OF POLARIZED LIGHT.
S. Mukai, S. Ueno, and A. P. Wang. Dec 72, 19p CONF-721145-1
Contract AT(40-3)-113

Descriptors: (*Visible radiation, Chandrasekhar theory), (*Chandrasekhar theory, *Invariant imbedding), Planetary atmospheres, Polarization, Reflection.

For abstract, see NSA 28 06, number 15172.

20G. Particle Accelerators

AAEC/E-249/GA PC$3.25/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
COMPUTER-TO-COMPUTER DATA LINK FOR A PDP7 AND PDP15.
L. E. Tighe. Dec 72, 25p
U.S. Sales Only.

Descriptors: (*Accelerator facilities, Pdp computers), (*Pdp computers, *Equipment interfaces), Data processing, Data transmission.

For abstract, see NSA 28 05, number 11383.

AWRE-O-18/73/GA PC$3.25/MF$1.45
Atomic Weapons Research Establishment, Aldermaston (England).
INVESTIGATIONS OF VACUUM ARC ION SOURCES.
W. D. Owen, and M. Richardson. Apr 73, 21p
U.S. Sales Only.

Descriptors: (*Ion sources, *Performance), Cathodes, Erbium ions, Plasma.

For abstract, see NSA 28 06, number 13563.

BNL-17813/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
TOLERANCES FOR QUADRUPOLES IN A SUPERCONDUCTING STORAGE ACCELERATOR.
G. Parzen. 2 Apr 73, 9p

Descriptors: (*Storage rings, *Magnetic fields), Errors, Isabelle storage ring, Magnets, Quadrupoles, Superconducting magnets, Tolerances.

For abstract, see NSA 28 04, number 08874.

BNL-17815/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
TRANSVERSE RESISTIVE WALL INSTABILITY FOR A WARM ISA.
M. Month. 18 Apr 73, 5p

Descriptors: (*Isabelle, *Beam dynamics), Instability, Tuning.

For abstract, see NSA 28 04, number 08866.

BNL-17892/GA PC$3.25/MF$1.45
Brookhaven National Lab., Upton, N. Y.
EFFECT OF BEAM WIDTH ON THE INCOHERENT NU -SHIFT DUE TO IMAGE FORCES.
M. Month, and R. L. Gluckstern. 1 May 73, 22p

Descriptors: (*Storage rings, *Beam dynamics), (*Accelerators, Beam dynamics), Betatron oscillations, Instability, Space charge, Vacuum systems.

For abstract, see NSA 28 04, number 08867.

BNL-17893/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
NONLINEAR TUNE SHIFT DUE TO THE LONG-RANGE BEAM--BEAM INTERACTION.
M. Month, and E. D. Courant. 1 May 73, 17p

Descriptors: (*Storage rings, Colliding beams), (*Colliding beams, *Beam luminosity), Beam dynamics, Betatron oscillations, Electromagnetic interactions, Space charge.

For abstract, see NSA 28 04, number 08875.

BNL-17896/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
LUMINOSITY FOR UNBUNCHED BEAMS IN THE ISA.
M. Month, and K. Jellett. 16 May 73, 18p

Descriptors: (*Isabelle storage ring, *Beam luminosity), Colliding beams, Design.

For abstract, see NSA 28 06, number 13437.

BNL-17906/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
RANDOM ERROR MULTIPOLES IN COSINE MAGNETS.
G. Parzen. 10 May 73, 5p

Descriptors: (*Beam bending magnets, *Errors), (*Electromagnets, Errors), Alignment, Dipoles, Magnetic fields, Multipoles.

For abstract, see NSA 28 06, number 13438.

BNL-17919/GA PC$3.50/MF$1.45
Brookhaven National Lab., Upton, N. Y.
DIAGNOSTIC STUDIES OF MP ACCELERATION TUBE FAILURE.
H. E. Wegner. 1973, 28p CONF-730530-3

Descriptors: (*Van de graaff accelerators, *Failures), Dielectric materials, Electrodes, Fractures, Glass.

For abstract, see NSA 28 06, number 13431.

CERN-73-6/GA PC$3.00/MF$1.45
European Organization for Nuclear Research, Geneva (Switzerland).
TWO DEVICES FOR OPERATOR INTERACTION IN THE CENTRAL CONTROL OF THE NEW CERN ACCELERATOR.
F. Beck, and B. Stumpe. 24 May 73, 15p
U.S. Sales Only.

Descriptors: (*Cern ii synchrotron, *Control systems), Camac system, Feedback, Interactive display devices.

For abstract, see NSA 28 05, number 11373.

INS-J-141/GA PC$3.25/MF$1.45
Tokyo Univ. (Japan). Inst. For Nuclear Study.
STABILITY OF THE BEAM LEVEL IN THE INS ELECTRON SYNCHROTRON MEASURED BY A POLARIZATION EXPERIMENT.
M. Kobayashi, and T. Nishikawa. 4 May 73, 21p
U.S. Sales Only.

Descriptors: (*Synchrotrons, *Beam monitoring), Beam position, Bremsstrahlung.

For abstract, see NSA 28 05, number 11374.

JAERI-M-5032/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
ACCELERATION OF NITROGEN IONS BY 2 MV VAN DE GRAAFF ACCELERATOR.
C. Kobayashi, and S. Kanda. Nov 72, 16p
In Japanese. U.S. Sales Only.

Descriptors: (*Nitrogen ions, *Acceleration), (*Van de graaff accelerators, *Nitrogen 14 beams), Heavy ions, Ion sources, Kev range 100-1000, Micro amp beam currents.

For abstract, see NSA 28 04, number 08865.

JINR-P16-7036/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
METHOD OF CALCULATING THE PROTON LOSSES AFTER INTERACTION WITH THE TARGETS OF CYCLE ACCELERATORS.
B. V. Vasilishin, L. N. Zaitsev, and I. M. Petoyan. 1973, 13p
In Russian. U.S. Sales Only.

Descriptors: (*Cyclic accelerators, *Stray radiation), Proton beams, Targets.

For abstract, see NSA 28 04, number 08861.

JINR-P7-7092/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
ACCELERATION OF GE IONS IN JINR CYCLOTRONS.
Yu. P. Tret'yakov, B. A. Zager, and I. A. Shelaev. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*Jinr cyclotrons, Germanium ions), (*Germanium ions, *Acceleration), Ion sources, Linear momentum, Mev range 01-10.

For abstract, see NSA 28 06, number 13429.

JINR-P9-7064/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr).
SCREENING OF THE ALTERNATIVE MAGNETIC FIELD IN COAXIAL SYSTEM OF TUBES WITH FINITE CONDUCTIVITY.
V. N. Mamonov. 1973, 10p
In Russian. U.S. Sales Only.

Descriptors: (*Collective accelerators, *Magnetic fields), Electric fields.

For abstract, see NSA 28 04, number 08869.

JINR-P9-7065/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr).
STABILITY OF COHERENT OSCILLATIONS OF AN ELECTRON RING IN RESONATOR. PART I. AZIMUTHAL OSCILLATIONS.
Yu. I. Aleksakhin, I. L. Korenev, and L. A. Yudin. 1973, 19p
In Russian. U.S. Sales Only.

Descriptors: (*Electron-ring accelerators, *Beam dynamics), Cavity resonators, Oscillations, Resonance, Stability.

For abstract, see NSA 28 05, number 11381.

JINR-P9-7066/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr).
STABILITY OF COHERENT OSCILLATIONS OF AN ELECTRON RING IN RESONATOR. PART II. TRANSVERSE OSCILLATIONS.
Yu. I. Aleksakhin, I. L. Korenev, and L. A. Yudin. 1973, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Cavity resonators, *Beam dynamics), Electron beams, Oscillations.

For abstract, see NSA 28 04, number 08870.

LA-UR-73-413/GA PC$3.25/MF$1.45
Los Alamos Scientific Lab., N. Mex.
PROTOTYPE TESTS ON A 200 WATT FORCED CONVECTION LIQUID HYDROGEN/DEUTERIUM TARGET.
K. D. Jr. Williamson, J. E. Simmons, F. J. Edeskuty, J. H. Fretwell, and J. T. Martin. 1973, 21p CONF-730805-6
Contract W-7405-eng-36

Descriptors: (*Lampf linac, Neutron sources), (*Neutron sources, Targets), (*Targets, Deuterium), (*Deuterium, Targets), Cooling, Mev range 100-1000, Mockup, Performance testing, Proton reactions, Refrigeration.

For abstract, see NSA 28 05, number 11384.

LA-UR-73-604/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
REFLECTIONS UPON DESIGN CRITERIA FOR A GOOD ACCELERATING TUBE.
J. L. McKibben. 13p CONF-730530-1

Descriptors: (*Electrostatic accelerators, *Electrodes), Design.

For abstract, see NSA 28 05, number 11375.

LA-UR-73-605/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
LAMB-SHIFT POLARIZED SOURCES AT LOS ALAMOS SCIENTIFIC LABORATORY.
J. L. McKibben. 15p CONF-730530-2

Descriptors: (*Ion sources, *Design), (*Hydrogen ions, *Polarized beams), (*Deuterium ions, Polarized beams), (*Tritium ions, Polarized beams), Lamb shift.

For abstract, see NSA 28 05, number 11379.

LA-UR-73-844/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
EXPECTATIONS AND PROBLEMS OF AN ON-LINE MASS SEPARATOR PROJECT ON A HIGH INTENSITY ACCELERATOR (LAMPF).
B. J. Dropesky, and B. R. Erdal. 1970, 10p CONF-730618-3
Contract W-7405-eng-36

Descriptors: (*Lampf linac, *Accelerator facilities), (*Electromagnetic isotope separation, Accelerator facilities), Hydrogen ions 1 minus, Isotope production, On-line systems, Planning.

For abstract, see NSA 28 05, number 11385.

LA-UR-73-855/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
USE OF MINICOMPUTERS IN PARTICLE ACCELERATORS.
R. A. Gore, and D. R. Machen. 1973, 37p CONF-730508-4

Descriptors: (*Lampf linac, *Control), (*Accelerators, Control), Beam monitoring, Computers, Data acquisition, Data processing, Ion sources, Magnetic fields.

For abstract, see NSA 28 05, number 11376.

LA-5013-T/GA PC$5.45/MF$1.45
Los Alamos Scientific Lab., N. Mex.
STATE ESTIMATION IN DISCRETE-TIME LINEAR SYSTEMS WITH QUADRATIC FORM OBSERVERS.
J. P. Jr. Shipley. May 73, 148p
Contract W-7405-eng-36

Descriptors: (*Van de graaff accelerators, Beam position), (*Beam position, Faraday cups), (*Faraday cups, Beam position), Mathematics, Numerical solution.

For abstract, see NSA 28 06, number 13432.

LA-5262-PR/GA PC$5.45/MF$1.45
Los Alamos Scientific Lab., N. Mex.
MEDIUM-ENERGY PHYSICS PROGRAM. QUARTERLY REPORT FOR THE PERIOD ENDING JANUARY 31, 1973.
E. Dunn. May 73, 49p
Contract W-7405-eng-36

Descriptors: (*Lampf linac, *Operation), Accelerator facilities, Research programs.

For abstract, see NSA 28 04, number 08845.

LBL-1050/GA PC$5.45/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
PHYSICS ANNUAL REPORT, JULY 1971--JUNE 1972.
W. A. Wenzel. 1972, 115p
Contract W-7405-eng-48

Descriptors: (*Accelerators, *Research programs), (*High energy physics, Research programs), (*Mathematics, Research programs), (*Thermonuclear reactions, Research programs), Atomic beams, Lawrence berkeley laboratory, Nuclear emulsions, Plasma, Radiation protection.

For abstract, see NSA 28 05, number 11634.

LBL-1375/GA PC$3.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
PROBLEMS IN DESIGN AND OPERATION OF SUPERHILAC BEAM TRANSPORT SYSTEMS.
F. B. Selph. Mar 73, 7p CONF-730310-58
Contract W-7405-eng-48

Descriptors: (*Superhilac, *Beam transport), Accelerator facilities, Design, Operation.

For abstract, see NSA 28 04, number 08876.

LBL-1389/GA PC$3.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
DESIGN FUNDAMENTALS OF CURRENT TRANSDUCTORS FOR LARGE DC CURRENTS.
L. T. Jackson. Mar 73, 5p CONF-730310-59
Contract W-7405-eng-48

Descriptors: (*Magnetic amplifiers, *Design), Direct current, Operation.

For abstract, see NSA 28 05, number 11377.

LBL-1398/GA PC$3.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
CHROMONITOR, A COLORFUL DYNAMIC GRAPHIC DISPLAY TERMINAL.
F. H. G. Lothrop. Mar 73, 3p CONF-730310-57
Contract W-7405-eng-48

Descriptors: (*Bevatron, *Control systems), Beam monitoring, Color, Display devices.

For abstract, see NSA 28 04, number 08862.

LBL-1698/GA PC$4.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
CONSIDERATIONS OF BEAM QUALITY REQUIREMENTS FOR EXPERIMENTS WITH VERY HEAVY IONS.
J. R. Alonso, and B. G. Harvey. May 73, 30p
Contract W-7405-eng-48

Descriptors: (*Accelerators, *Heavy ions), Beam emittance, Brightness, Energy resolution, Heavy ion reactions, Performance.

For abstract, see NSA 28 04, number 08846.

LYCEN-7266/GA PC$3.00/MF$1.45
Lyon Univ. (France). Institut de Physique Nucleaire.
BIBLIOGRAPHIC STUDY OF THE CAUSES OF ENERGY FLUCTUATIONS IN A VAN DE GRAAFF ACCELERATOR.
M. Tholomier, and M. Gaillard. Oct 72, 11p
In French. U.S. Sales Only.

Descriptors: Beam currents, Electric charges, Electric currents, Energy, Mechanical vibrations, Operation, Reviews, Van de graaff accelerators, Variations.

For abstract, see NSA 28 04, number 08847.

PAT-APPL-267572/GA PC$3.00/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
IMPROVED DISPENSING TARGETS FOR ION BEAM PARTICLE GENERATORS.
Patent Application.
C. G. Miller. Filed 29 Jun 72, 16p NASA-CASE-NPO-13112-1,
Contract NAS7-100
Subm-Sponsored by NASA.
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Ion beams, *Ion impact, *Particle accelerator targets, *Particle beams, *Particle production, Equipment specifications, Patent applications, Target thickness.

The development of improved dispensing targets for ion beam particle generators is discussed. A palladium tubular housing or capsule is coated with interior thin layers of titanium or zirconium metal following which the latter surface is treated with tritium which remains within the palladium housing for an indefinite storage life. Diagrams of the equipment and details of the operations are provided.

RHEL/M/A-25/GA PC$3.50/MF$1.45
Rutherford High Energy Lab., Chilton (England).
SUPERCONDUCTOR CABLES FOR PULSED DIPOLE MAGNETS.
G. E. Gallagher-Daggitt. Feb 73, 27p
U.S. Sales Only.

Descriptors: (*Synchrotrons, Superconducting magnets), (*Superconducting magnets, Electric cables), (*Electric cables, *Fabrication), Dipoles, Pulses.

For abstract, see NSA 28 04, number 08863.

RL-73-2/GA PC$3.00/MF$1.45
Rutherford High Energy Lab., Chilton (England).
NIMROD OPERATION AND DEVELOPMENT QUARTERLY REPORT, JANUARY 1--MARCH 31, 1973.
D. E. Gray. Apr 73, 17p
U.S. Sales Only.

Descriptors: (*Nimrod, *Operation), Beam injection, High energy physics, Linear accelerators, Maintenance, Mev range 10-100.

For abstract, see NSA 28 05, number 11371.

RLO-2230-T-4-84/GA PC$4.25/MF$1.45
Oregon Univ., Eugene.
PARTICLE ACCELERATOR UTILIZING TEMPLATE MODULATED COHERENT LIGHT ENHANCED BY OPTICAL RESONATOR.
P. L. Csonka. 1972, 45p

Descriptors: (*Coherent accelerators, *Design), Lasers, Operation, Optical systems.

For abstract, see NSA 28 04, number 08848.

SLA-73-5250/GA PC$3.50/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
THEORETICAL ANALYSIS OF THE ENERGY SPECTRA OF BACKSCATTERED IONS.
D. K. Brice. 1973, 27p CONF-730632-1.

Descriptors: (*Ion collisions, *Backscattering), (*Ion beams, Backscattering), Cross sections, Delta function, Depth, Distribution, Energy spectra, Gauss function, Iterative methods, Stopping power, Targets.

For abstract, see NSA 28 06, number 14229.

SLA-73-5275/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
EXP 16 O CONTAMINATION IN EXP 4 HE ANALYSIS BEAMS.
S. T. Picraux, J. A. Borders, and R. A. Langley. 1973, 18p CONF-730632-2

Descriptors: (*Van de graaff accelerators, *Ion beams), (*Helium ions, *Acceleration), Electron detachment, Helium 4, Oxygen ions, Oxygen 16.

For abstract, see NSA 28 06, number 13430.

SLA-73-5471/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
GENERATION, TRANSPORT, AND COMPRESSION OF AN ANNULAR INTENSE RELATIVISTIC ELECTRON BEAM WITH RETURN CURRENT FEEDBACK THROUGH THE CATHODE.
J. G. Kelly. 1972, 14p CONF-730529-2

Descriptors: (*Accelerators, *Operation), Beam transport, Electron beams, Kilo amp beam currents, Mev range 01-10, Relativistic range.

For abstract, see NSA 28 05, number 11372.

SLAC-160/GA PC$5.45/MF$1.45
Stanford Linear Accelerator Center, Calif.
DESIGN AND OPERATION OF SLAC BEAMLINE 20-21-22.
F. C. Winkelmann. Apr 73, 122p
Contract AT(04-3)-515

Descriptors: (*Stanford 20-gev linac, *Accelerator facilities), Beam optics, Beam separators, Beam transport, Design, Operation, Secondary beams, Targets.

For abstract, see NSA 28 05, number 11386.

20H. Particle Physics

AD-768 042/4GA PC$3.00/MF$1.45
Mathematical Applications Group Inc Elmsford N Y
ADDITIONAL ANALYSIS OF NEUTRON AND SECONDARY GAMMA RAY TRANSPORT IN CONCRETE USING THE SAM-CE MONTE CARLO CODE.
Final rept.,
Martin O. Cohen, and Mendel Beer. Sep 73, 43p
Rept no. MR-7035 DNA-3182T
Contract DNA001-73-C-0016

Descriptors: (*Shielding, Concrete), (*Neutron transport theory, *Programming(Computers)), (*Gamma rays, Transport properties), Neutron

cross sections, Gamma-ray cross sections, Graphics.
Identifiers: *SAM CE computer code, Gamma ray transport theory, Histograms.

The SAM-CE Monte Carlo code has been used to analyze the time-dependent transport of neutrons and secondary gamma rays in a forty centimeter thick slab of concrete. Calculated counting rates and energy leakage spectra at a detector located behind the concrete slab, are compared with previous SAM-CE calculations involving older cross section sets. The results are also compared with similar experimental results obtained by Gulf Radiation Technology. (Author)

AECD/TP-31/GA PC$3.00/MF$1.45
Atomic Energy Centre, Dacca (Pakistan).
DOES AN L-INDEPENDENT ALPHA -- ALPHA INTERACTION EXIST.
M. Rahman, S. Ali, and S. A. Afzal. Sep 72, 11p
U.S. Sales Only.

Descriptors: (*Alpha reactions, *Elastic scattering), (*Helium 4, Alpha reactions), Coulomb field, Mev range 10-100, Orbital angular momentum, Woods-saxon potential.

For abstract, see NSA 28 04, number 09520.

AECD/TP-32/GA PC$3.00/MF$1.45
Atomic Energy Centre, Dacca (Pakistan).
SCATTERING FROM NONLOCAL, NON-SEPARABLE POTENTIAL AND N + ALPHA PHASE SHIFT.
S. M. M. R. Chowdhury, and S. Suhrabuddin. Sep 72, 14p
U.S. Sales Only.

Descriptors: (*Helium 4, *Neutron reactions), Nucleon-nucleon potential, Partial waves, Phase shift, Potential scattering, Scattering, Yukawa potential.

For abstract, see NSA 28 04, number 09521.

AERE-R-7425/GA PC$3.25/MF$1.45
Atomic Energy Research Establishment, Harwell (England).
PRELIMINARY MEASUREMENT OF THE NEUTRON TOTAL CROSS SECTION OF IRON FROM 24 KEV TO 1000 KEV USING THE HARWELL SYNCHROCYCLOTRON.
N. J. Pattenden, I. T. Belcher, I. M. Blair, P. H. Bowen, and G. C. Cox. Apr 73, 22p
U.S. Sales Only.

Descriptors: (*Neutron reactions, *Total cross sections), (*Iron, Neutron reactions), Interference, Kev range 10-100, Kev range 100-1000, Potential scattering, Resonance.

For abstract, see NSA 28 06, number 14037.

ANL/HEP-7318/GA PC$3.00/MF$1.45
Argonne National Lab., Ill.
PI PI AND K PI SCATTERING STUDIES WITH THE ARGONNE EFFECTIVE MASS SPECTROMETER.
D. S. Ayres, R. Diebold, A. F. Greene, S. L. Kramer, and A. J. Pawlicki. May 73, 14p CONF-730319-2

Descriptors: (*Pion-pion interactions, *Elastic scattering), (*Kaon-kaon interactions, Elastic scattering), (*Pion-kaon interactions, Elastic scattering), Gev range 01-10, Interference, Nucleons, Omega-784 resonances, Pion-nucleon interactions, Pions minus, Pions plus, Rho-765 resonances, Kaons minus, Kaons plus, Neutrons, Pion-proton interactions, Kaon-neutron interactions, Protons.

For abstract, see NSA 28 05, number 11655.

ANL/HEP-7320/GA PC$3.00/MF$1.45
Argonne National Lab., Ill.
RHO--OMEGA INTERFERENCE IN THE REACTION PI N IMPLIES PI PI N AT 3, 4, AND 6 GEV/C.
D. S. Ayres, R. Diebold, A. F. Greene, S. L. Kramer, and A. J. Pawlicki. May 73, 5p CONF-730319-3

Descriptors: (*Rho-765 resonances, *Interference), (*Omega-784 resonances, Interference), (*Pion-nucleon interactions, Interference), Exchange degeneracy, Gev range 01-10, Nucleons, Pions, Regge poles.

For abstract, see NSA 28 05, number 11656.

BNL-17846/GA PC$4.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
AMPLITUDE ANALYSES OF HYPERCHARGE EXCHANGE REACTIONS.
R. D. Field. Apr 73, 37p CONF-730319-4

Descriptors: (*Pion-proton interactions, *Scattering amplitudes), (*Kaon-neutron interactions, Scattering amplitudes), (*Kaon-proton interactions, Scattering amplitudes), (*Photon-proton interactions, Scattering amplitudes), Hypercharge, Protons, Quark model, Su-3 groups, Kaons plus, Lambda particles, Photon beams, Kaon beams, Kaons minus, Omega-784 resonances, Phi-1019 resonances, Neutrons, Pions minus, Kaons neutral, Pion beams, Sigma-1385 resonances.

For abstract, see NSA 28 05, number 11737.

BNL-17857/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
TWO-NUCLEON FORM FACTORS FOR HEAVY-ION DWBA CALCULATIONS.
A. J. Baltz, and S. Kahana. Mar 73, 16p CONF-730312-8

Descriptors: (*Heavy ion reactions, *Pickup reactions), (*Ion beams, Pickup reactions), (*Molybdenum isotopes, *Oxygen 18 reactions), (*Nickel isotopes, Oxygen 18 reactions), Dwba, Form factors, Transfer reactions, Heavy ions, Angular distribution, Cross sections, Mev range 10-100, Oxygen 18 beams.

For abstract, see NSA 28 05, number 11914.

BNL-17858/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
SUMMARY FOR ARGONNE SYMPOSIUM.
S. Kahana. Apr 73, 10p CONF-730312-9

Descriptors: (*Heavy ion reactions, Direct reactions), (*Direct reactions, *Nuclear reaction kinetics), (*Heavy ions, Direct reactions), Elastic scattering, Inelastic scattering, Ion beams, Meetings, Reviews, Transfer reactions.

For abstract, see NSA 28 05, number 11915.

BNL-17861/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y. Rome Univ. (Italy). Istituto di Fisica. Grumman Aircraft Engineering Corp., Bethpage, N. Y.
SEARCH FOR HIGH ENERGY MULTIGAMMA EVENTS AT THE ISR.
L. C. L. Yuan, G. F. Dell, H. Uto, E. Amaldi, and M. Beneventano. 15p CONF-730320-1

Descriptors: (*Proton-proton interactions, Photons), (*Photons, *Multiple production), (*Protons, *Proton beams), Cherenkov counters, Cross sections, Energy spectra, Gev range 10-100, Multiplicity.

For abstract, see NSA 28 05, number 11635.

BNL-17866/GA PC$3.00/MF$1.45
European Organization for Nuclear Research, Geneva (Switzerland). Paris Univ., Orsay (France). Brookhaven National Lab., Upton, N. Y.
POSSIBLE EFFECTS OF WEAKLY COUPLED NEUTRAL CURRENTS IN PP IMPLIES L EXP + L EXP - + X.
M. K. Gaillard. Jun 72, 19p

Descriptors: (*Proton-proton interactions, *Inclusive interactions), (*Protons, *Proton beams), (*Leptons, *Pair production), Asymmetry, Coupling, Electric charges, Obe model, Parton model, Photons.

For abstract, see NSA 28 06, number 13677.

BNWL-SA-4708/GA PC$3.50/MF$1.45
Battelle Pacific Northwest Labs., Richland, Wash.
NATURE OF FISSION AND THE CRITICALITY PROCESS (FROM PROTACTINIUM TO CALIFORNIUM AND BEYOND).
E. D. Clayton. 1973, 29p

Descriptors: (*Actinides, *Criticality), (*Fission, Actinides), Activation energy, Analytical solution, Critical mass, Fissile materials, Interactions, Neutrons, Thermal neutrons.

For abstract, see NSA 28 05, number 12151.

CEA-N-1582/GA PC$5.25/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.
THEORY OF THE EXPONENTIAL EXPERIMENT: APPLICATION OF THE C/SUB N/ METHOD AND SYNTHETIC SLOWING-DOWN MODELS.
A. Kavenoky, and H. Lorain. Feb 73, 63p
In French. U.S. Sales Only.

Descriptors: (*Subcritical assemblies, *Neutron slowing-down theory), Fast neutrons, Fission, Fourier transformation, Green function, Multigroup theory, Neptunium 237, Neutron flux, One-dimensional calculations, Plutonium 239, Two-dimensional calculations, Uranium 235, Uranium 238.

For abstract, see NSA 28 04, number 10019.

CNRS-CPT-72-P-495/GA PC$3.00/MF$1.45
Centre National de la Recherche Scientifique, Marseilles (France). Centre de Physique Theorique.
GROUP THEORETICAL ANALYSIS OF A NON-RELATIVISTIC PARTICLE IN THE FIELD OF AN ELECTROMAGNETIC WAVE IN THE DIPOLE APPROXIMATION.
J. Kubar-Andre. Dec 72, 16p
U.S. Sales Only.

Descriptors: (*Group theory, *Symmetry groups), (*Charged particles, *Electromagnetic fields), Atoms, Dipoles, Electromagnetic radiation, Galilei transformations, Gamma radiation, Irreducible representations, Mathematical space, Nuclei.

For abstract, see NSA 28 06, number 13643.

COM-73-50822/8GA Not available NTIS
National Bureau of Standards, Washington, D.C.
LOW-(Q SUP 2) ELECTRON SCATTERING FROM THE 15.109-MEV STATE OF 12C AND THE CONSERVED-VECTOR-CURRENT TEST.
Final rept.,
B. T. Chertok, C. Sheffield, J. W. Lightbody, Jr., S. Penner, and D. Blum. 1973, 14p
Grant NSF-GP-16565
Pub. in Physical Review, C, Nuclear Physics, v8 n1 p23-36 Jul 73.

Descriptors: (*Electron scattering, *Carbon 12), Extrapolation.

High precision electron scattering measurements from the 15.109 MeV 1+ state in 12C are made at theta = 75 degrees and 110 degrees with 35 < or = E < or = 55 MeV. From the measurements B(M1) is extrapolated to the photon point and the radiative width is determined (Gamma sub gamma) = 37.0 Plus or minus 1.1eV. The corresponding weak magnetism results for beta decay and muon capture are given. (Author)

CONF-730538-1/GA PC$3.00/MF$1.45
Australian Atomic Energy Commission Research Establishment, Lucas Heights.
NEUTRON CAPTURE CROSS SECTIONS OF THE ISOTOPES OF CALCIUM AND BARIUM.
B. J. Allen, D. M. H. Chan, A. R. deL. Musgrove, and R. L. Macklin. 1971, 14p

Descriptors: (*Calcium 40, *Neutron reactions), (*Calcium 42, Neutron reactions), (*Calcium 43, Neutron reactions), (*Calcium 44, Neutron reactions), Capture, Fast neutrons, Gamma radiation, Intermediate neutrons, Kev range 01-10, Kev range 10-100, Kev range 100-1000, Level widths, Neutron beams, Nuclear reactions, Resonance, Calcium 45, Excitation functions, Calcium 41, Barium 134, Barium 135, Barium 136, Barium 137, Barium 138, Barium 139.

For abstract, see NSA 28 06, number 14038.

COO-1428-322/GA PC$3.00/MF$1.45
Purdue Univ., Lafayette, Ind. Dept. Of Physics.
NOVEL TECHNIQUE TO STUDY DIFFRACTIVE BARYON RESONANCES.
E. W. Anderson, A. R. Erwin, and G. P. Fisher. 6p
Contract AT(11-1)-1428

Descriptors: (*Protons, *Proton beams), (*N*resonances, *Particle production), (*Proton-proton interactions, *Missing mass), Diffraction models, Spark chambers, Spectrometers.

For abstract, see NSA 28 05, number 11644.

COO-2146-3/GA PC$3.00/MF$1.45
Case-Western Reserve Univ., Cleveland, Ohio. Dept. Of Physics.
NUCLEON--NUCLEON POLARIZATION CORRELATION EXPERIMENTS IN THE 300 TO 800 MEV RANGE. TECHNICAL PROGRESS REPORT FOR A PROGRAM IN MEDIUM ENERGY NUCLEAR PHYSICS RESEARCH, SEPTEMBER 1, 1972--AUGUST 31, 1973.
H. B. Willard. 25 May 73, 9p
Contract AT(11-1)-2146

Descriptors: (*Nucleon-nucleon interactions, *Polarization), (*Nucleons, *Nucleon beams), Correlations, Mev range 100-1000.

For abstract, see NSA 28 05, number 11645.

COO-2231-4/GA PC$3.00/MF$1.45
Kent State Univ., Ohio (Usa). Dept. Of Physics.
HIGH-ENERGY NEUTRONS PRODUCED BY 740-MEV PROTONS ON URANIUM.
R. Madey, and F. M. Waterman. 1972, 8p CONF-720444-3

Descriptors: (*Neutron sources, *Performance), (*Proton beams, *Nuclear reactions), (*Proton reactions, *Knock-out reactions), (*Uranium, Proton reactions), Mev range 01-10, Mev range 10-100, Mev range 100-1000, Neutron spectra.

For abstract, see NSA 28 06, number 14097.

COO-2232-3/GA PC$3.00/MF$1.45
European Organization for Nuclear Research, Geneva (Switzerland). Columbia Univ., New York. Rockefeller Univ., New York.
RESULTS ON LARGE TRANSVERSE MOMENTUM PHENOMENA.
F. W. Buesser, L. Camilleri, L. Di Lella, G. Gladding, and A. Placci. 1973, 11p CONF-730320-2

Descriptors: (*Proton-proton interactions, *Inclusive interactions), (*Pions neutral, *Particle production), (*Electrons, Particle production), (*Positrons, Particle production), Charged particles, Correlations, Cross sections, Distribution, Energy spectra, Gev range 10-100, Linear momentum, Mass, Multiplicity, Pair production, Proton beams, Protons.

For abstract, see NSA 28 06, number 13610.

COO-2232-6/GA PC$3.75/MF$1.45
Harvard Univ., Cambridge, Mass.
SEARCH FOR PHOTOPRODUCTION OF BOSONS BY THE MISSING MASS TECHNIQUE, MEASUREMENT OF THE S AND T DISTRIBUTION OF THE PHOTOPRODUCED HADRONIC CONTINUUM, AND MEASUREMENT OF INCLUSIVE PI EXP + AND PROTON SPECTRA PRODUCED BY PHOTONS.
G. E. Gladding, J. J. Russell, M. J. Tannenbaum, J. M. Weiss, and G. B. Thomson. 1972, 31p CONF-720923-17
Contract AT(30-1)-2752

Descriptors: (*Rho-765 resonances, *Photoproduction), (*Omega-784 resonances, Photoproduction), (*Delta-1236 resonances, Photoproduction), Boundary conditions, Cross sections, Distribution, Energy, Gev range 01-10, Inclusive interactions, Linear momentum, Missing mass, Photon beams, Photon-proton interactions, Pions minus, Pions plus, Protons, Recoils, Spectra.

For abstract, see NSA 28 06, number 13602.

COO-3001-39/GA PC$4.50/MF$1.45
State Univ. Of New York, Albany. Research Foundation. State Univ. Of New York, Stony Brook.
RESEARCH IN THEORETICAL NUCLEAR PHYSICS. PROGRESS REPORT AND RENEWAL PROPOSAL.
A. Arima, G. E. Brown, A. D. Jackson, and T. T. S. Kuo. 31 May 73, 47p
Contract AT(11-1)-3001

Descriptors: (*Nuclear physics, *Research programs), Fission, Heavy nuclei, New york, Nuclear reactions, Nucleon-nucleon interactions, Three-body problem, Two-body problem.

For abstract, see NSA 28 04, number 09699.

COO-3001-40/GA PC$3.00/MF$1.45
State Univ. Of New York, Stony Brook. Dept. Of Physics.
NEW APPROACH TO DEFORMATION ENERGY CALCULATIONS.
C. M. Ko, H. C. Pauli, M. Brack, and G. E. Brown. 1973, 13p

Descriptors: (*Heavy nuclei, *Nuclear deformation), (*Intermediate mass nuclei, Nuclear deformation), (*Ytterbium 168, *Binding energy), (*Plutonium 240, Binding energy), Hartree-fock method, Potential energy.

For abstract, see NSA 28 06, number 14120.

COO-3001-41/GA PC$3.00/MF$1.45
State Univ. Of New York, Stony Brook. Dept. Of Physics.
ELECTRIC-DIPOLE SUM RULE AND TWO-BODY CORRELATIONS IN NUCLEI.
W. T. Weng, T. T. S. Kuo, and G. E. Brown. 1973, 20p
Contract AT(11-1)-3001

Descriptors: (*Nuclear theory, *Sum rules), (*Helium 4, *Nuclear structure), (*Oxygen 16, Nuclear structure), (*Calcium 40, Nuclear structure), Brueckner method, Correlations, Dipoles, Electric dipole moments, Goldstone diagrams, Perturbation theory, Two-body problem.

For abstract, see NSA 28 06, number 14121.

COO-3058-34/GA PC$4.75/MF$1.45
Rensselaer Polytechnic Inst., Troy, N. Y.
LINEAR ACCELERATOR PROJECT. PROGRESS REPORT, JANUARY 1, 1973--MARCH 31, 1973.
E. R. Gaerttner. 1973, 52p
Contract AT(11-1)-3058

Descriptors: (*Neutron reactions, *Research programs), (*Optical models, Research programs), (*Neutron transport, Research programs), (*Linear accelerators, Research programs), Resonance.

For abstract, see NSA 28 06, number 14098.

COO-3065-25/GA PC$4.50/MF$1.45
Rochester Univ., N. Y. Dept. Of Physics and Astronomy.
SINGLE-PARTICLE INCLUSIVE REACTIONS.
T. Ferbel. 29 Sep 72, 48p CONF-720640-2, UR-408
Contract AT(11-1)-3065

Descriptors: (*Inclusive interactions, *Reviews), (*Protons, *Kaon beams), (*Pion-proton interactions, Inclusive interactions), (*Kaon-proton interactions, Inclusive interactions), Particle production, Photon beams, Photon-proton interactions, Pion beams, Proton beams, Proton-proton interactions.

For abstract, see NSA 28 05, number 11646.

COO-3065-30/GA PC$3.00/MF$1.45
Rochester Univ., N. Y. Dept. Of Physics and Astronomy.
SEARCH FOR ISOTOPIC SPIN 2 MULTIPION RESONANCES.
D. Cohen, T. Ferbel, P. Slattery, and B. Werner. 1972, 16p UR-413
Contract AT(11-1)-3065

Descriptors: (*Pion-deuteron interactions, Meson resonances), (*Meson resonances, *Particle production), Boundary conditions, Bubble chambers, Gev range 01-10, Inclusive interactions, Isospin, Missing mass, Pions, Pions minus.

For abstract, see NSA 28 05, number 11657.

COO-3065-32/GA PC$14.25/MF$1.45
Rochester Univ., N. Y. Dept. Of Physics and Astronomy.
MUON--PROTON SCATTERING AT HIGH MOMENTUM TRANSFERS.
I. G. Kostoulas. 1972, 244p UR-415
Contract AT(11-1)-3065

Descriptors: Cross sections, Distribution, Elastic scattering, Electron-proton interactions, Electrons, Gev range 01-10, Inelastic scattering, Missing mass, Muon-proton interactions, Muons, Parton model, Structure functions.

For abstract, see NSA 28 05, number 11636.

COO-3065-33/GA PC$3.00/MF$1.45
Rochester Univ., N. Y. Michigan Univ., Ann Arbor.
EVIDENCE FOR A DIFFRACTIVE COMPONENT IN MULTIPARTICLE PRODUCTION AT 102 GEV.
C. M. Bromberg, D. Cohen, T. Ferbel, P. Slattery, and J. W. Chapman. 1973, 11p UMBC-72-14, UR-416

Descriptors: (*Proton-proton interactions, *Diffraction models), (*Multiple production, Diffraction models), Bubble chambers, Cross sections, Gev range 100-1000, Inclusive interactions, Inelastic scattering, Particle production, Protons, Recoils, Spectra, Topology, Total cross sections.

For abstract, see NSA 28 05, number 11647.

COO-3122-4/GA PC$4.75/MF$1.45
Columbia Univ., New York. Dept. Of Chemistry.
BEHAVIOR OF THE PARTICLES TRANSFERRED IN THE EXP 16 O + EXP 197 AU AND EXP 12 C + EXP 197 AU REACTIONS.
Y. Eyal, K. Beg, D. Logan, J. Miller, and A. Zebelman. Apr 73, 53p
Contract AT(11-1)-3122

Descriptors: (*Gold 197, Carbon 12 reactions), (*Oxygen 16 reactions, *Transfer reactions), (*Oxygen 16 beams, Transfer reactions), (*Carbon 12 reactions, Transfer reactions), Angular distribution, Carbon 12 beams, Differential cross sections, Energy spectra, Mev range 100-1000, Nuclear reaction kinetics.

For abstract, see NSA 28 06, number 14092.

COO-3130-TA-279/GA PC$3.00/MF$1.45
Brown Univ., Providence, R. I. Dept. Of Physics.
HADRONIC SCATTERING AT SMALL AND LARGE MOMENTUM TRANSFERS.
H. M. Fried. 1973, 8p CONF-730334-1

Descriptors: (*Hadron-hadron interactions, *Eikonal approximation), (*Hadrons, *Strong interactions), Boundary conditions, Corrections, Linear momentum transfer, Particle models, Scattering amplitudes.

For abstract, see NSA 28 05, number 11709.

COO-3130-TA-280/GA PC$3.00/MF$1.45
Brown Univ., Providence, R. I. Dept. Of Physics.
CLUSTERINGS IN HADRONIC PRODUCTION AND MARKOVIAN WALK.
C. I. Tan. 15p CONF-730334-4
Contract AT(11-1)-3130

Descriptors: (*Hadrons, *Particle production), (*Inclusive interactions, *Scaling laws), Correlations, Cross sections, Markov process, Multiperipheral model.

For abstract, see NSA 28 05, number 11679.

COO-3130-TA-285/GA PC$3.00/MF$1.45
European Organization for Nuclear Research, Geneva (Switzerland). Paris Univ., Orsay (France). Brown Univ., Providence, R. I. Dept. Of Physics.
TWO-REGGEON CUT PROBLEMS.
K. Kang. 27 Apr 73, 7p CONF-730334-3
Contract AT(11-1)-3130

Descriptors: Inclusive interactions, Interactions, Regge cuts, Scattering amplitudes, Sum rules, Unitarity.

For abstract, see NSA 28 05, number 11779.

COO-3227-31/GA PC$3.00/MF$1.45
Massachusetts Inst. Of Tech., Cambridge. Dept. Of Mathematics. National Accelerator Lab., Batavia, Ill. Harvard Univ., Cambridge, Mass. Gordon Mckay Lab.
IMPACT PICTURE OF PP, ANTI PP, PI EXP +- P, AND K EXP +- P ELASTIC SCATTERING FROM 20 TO 5000 GEV.
H. Cheng, J. K. Walker, and T. T. Wu. 1973, 17p

Descriptors: (*Proton beams, *Protons), (*Antiproton beams, Protons), (*Pion beams, Protons), (*Kaon beams, Protons), Elastic scattering, Gev range 10-100, Gev range 100-1000, Impact parameter, Kaon-proton interactions, Kaons minus, Kaons plus, Particle models, Pion-proton interactions, Pions minus, Pions plus, Proton-antiproton interactions, Proton-proton interactions, Quantum field theory, Strong interactions.

For abstract, see NSA 28 04, number 09384.

COO-3227-32/GA PC$3.00/MF$1.45
Massachusetts Inst. Of Tech., Cambridge. Dept. Of Mathematics. National Accelerator Lab., Batavia, Ill. Harvard Univ., Cambridge, Mass. Gordon Mckay Lab.
RATIO OF REAL TO IMAGINARY PARTS FOR PP, ANTI PP, PI EXP +- P, AND K EXP +- P FORWARD ELASTIC SCATTERING AMPLITUDES FROM 50 TO 5000 GEV.
H. Cheng, J. K. Walker, and T. T. Wu. 1973, 10p

Descriptors: (*Proton beams, *Protons), (*Antiproton beams, Protons), (*Pion beams, Protons), (*Kaon beams, Protons), Elastic scattering, Gev range 10-100, Gev range 100-1000, Impact parameter, Kaon-proton interactions, Kaons minus, Kaons plus, Particle models, Pion-proton interactions, Pions minus, Pions plus, Proton-antiproton interactions, Proton-proton interactions, Scattering amplitudes, Tev range.

For abstract, see NSA 28 04, number 09398.

COO-3494-5/GA PC$3.50/MF$1.45
Rochester Univ., N. Y.
NUCLEAR REACTION MECHANISMS. PROGRESS REPORT, MAY 1972--MAY 1973.
M. Blann. 1973, 28p
Contract AT(11-1)-3494

Descriptors: (*Heavy ion reactions, *Compound nucleus reactions), (*Ion beams, *Nuclear reaction kinetics), Compound nuclei, Research programs, Statistical models.

For abstract, see NSA 28 05, number 11916.

COO-3496-27/GA PC$3.50/MF$1.45
Rochester Univ., N.Y. Nuclear Structure Research Lab.
THRESHOLD PHOTOFISSION: THEORY AND EXPERIMENT.
J. R. Huizenga, and H. C. Britt. Mar 73, 29p
CONF-730301-9, UR-NSRL-69

Descriptors: (*Even-even nuclei, Photonuclear reactions), (*Photonuclear reactions, *Photofission), (*Thorium 232, Photonuclear reactions), (*Uranium 238, Photonuclear reactions), Angular distribution, Bremsstrahlung, Cross sections, Energy dependence, Gamma radiation, Total cross sections.

For abstract, see NSA 28 06, number 14123.

COO-3533-15/GA PC$3.00/MF$1.45
Syracuse Univ., N. Y. Dept. Of Physics.
CONSEQUENCES OF LOCAL DUALITY IN K EXP - P IMPLIES PI EXP +- SIGMA EXP -+ (1385).
P. M. Shah. Apr 73, 14p SU-4205-15

Descriptors: (*Kaon-proton interactions, *Duality), (*Pion-proton interactions, Duality), (*Protons, *Kaon beams), Delta-1236 resonances, Differential cross sections, Gev range 01-10, Kaons minus, Particle production, Pion beams, Pions minus, Pions neutral, Pions plus, Sigma-1385 resonances.

For abstract, see NSA 28 06, number 13739.

COO-3533-17/GA PC$5.75/MF$1.45
Syracuse Univ., N. Y. Dept. Of Physics.
LECTURES ON DUAL RESONANCE MODELS. PART THREE: OPERATOR FORMALISM.
P. H. Frampton. 1972, 72p SU-4205-17

Descriptors: (*Dual resonance model, *Scattering amplitudes), Fock representation, Gauge invariance, Group theory, Harmonic oscillators, Lectures, Mathematical operators, Metrics, Multiple production, Propagator, Regge poles, Relativistic range.

For abstract, see NSA 28 06, number 13699.

COO-3533-18/GA PC$3.00/MF$1.45
Syracuse Univ., N. Y. Dept. Of Physics.
DUAL MODELS FOR FOUR MESON BORN TERMS.
A. P. Balachandran, and H. Rupertsberger. Mar 73, 13p SU-4205-18

Descriptors: (*Meson-meson interactions, *Scattering amplitudes), (*Mesons, *Meson beams), Born approximation, Dual resonance model, Group theory.

For abstract, see NSA 28 06, number 13723.

COO-3533-19/GA PC$5.25/MF$1.45
Syracuse Univ., N. Y. Dept. Of Physics.
LECTURES ON DUAL RESONANCE MODELS. PART FOUR: INTERNAL SYMMETRY.
P. H. Frampton. Apr 73, 63p SU-4205-19

Descriptors: (*Dual resonance model, *Symmetry), Baryon number, Conservation laws, Hadrons, Isospin, Lectures, Strangeness.

For abstract, see NSA 28 06, number 13624.

COO-3533-20/GA PC$3.25/MF$1.45
Syracuse Univ., N. Y. Dept. Of Physics.
REGGE-SLOPE EXPANSION OF MESON BORN AMPLITUDES.
P. H. Frampton, and K. C. Wali. Apr 73, 23p SU-4205-20

Descriptors: (*Meson-meson interactions, *Scattering amplitudes), (*Mesons, *Meson beams), Born approximation, Dual resonance model, Lagrangian function, Mass, Quantum field theory, Regge poles, Scalar fields, Series expansion.

For abstract, see NSA 28 06, number 13724.

COO-3533-21/GA PC$3.00/MF$1.45
Syracuse Univ., N. Y. Dept. Of Physics.
REGGE ANALYSIS OF CORRELATIONS IN THE CENTRAL PLATEAU.
R. F. Amann, and K. Geer. May 73, 9p SU-4205-21

Descriptors: (*Protons, *Proton beams), (*Proton-proton interactions, *Regge poles), Correlations, Cross sections, Electric charges, Inelastic scattering, Kaons, Particle production, Pions.

For abstract, see NSA 28 06, number 13774.

COO-3533-22/GA PC$4.00/MF$1.45
Syracuse Univ., N. Y.
RESEARCH PROGRAM IN ELEMENTARY PARTICLE THEORY. PROGRESS REPORT FOR THE PERIOD ENDING AUGUST 31, 1973.
1973, 39p SU-4205-22
Contract AT(11-1)-3533

Descriptors: (*High energy physics, *Research programs), Elementary particles.

For abstract, see NSA 28 05, number 11680.

COO-3533-23/GA PC$3.00/MF$1.45
Syracuse Univ., N. Y. Dept. Of Physics.

COMMENTS ON A PAPER BY KHURI.
A. P. Balachandran. May 73, 6p SU-4205-23

Descriptors: (*Elementary particles, *Interactions), (*Multiple production, *Cross sections), Boundary conditions, Multiplicity, Particle production, Pomeranchuk poles, Total cross sections.

For abstract, see NSA 28 06, number 13700.

DESY-73/11/GA PC$3.50/MF$1.45
Deutsches Elektronen-Synchrotron, Hamburg (West Germany).
PREDICTIONS OF A QUARK--PARTON MODEL FOR E EXP + E EXP - ANNIHILATION INTO HADRONS.
N. S. Craigie, A. B. Kraemmer, and K. D. Rothe. Apr 73, 26p
U.S. Sales Only.

Descriptors: (*Electron-positron interactions, *Annihilation), (*Hadrons, *Electroproduction), (*Parton model, Electron-positron interactions), (*Quark model, Electron-positron interactions), Antiparticles, Boundary conditions, Coupling, Decay, Diagrams, Distribution, Electric charges, Feynman diagram, Field theories, Final-state interactions, G parity, Gauge invariance, Inclusive interactions, Interactions, Kaons, Multiplicity, Phase space, Pions, Pions, Propagator, Quarks, Scale invariance, Spin, Structure functions, Total cross sections, Virtual particles, Ward identity.

For abstract, see NSA 28 06, number 13644.

DESY-73/12/GA PC$3.00/MF$1.45
Deutsches Elektronen-Synchrotron, Hamburg (West Germany).
ISR RISING CROSS SECTION AND FINITE ENERGY EFFECTS IN THE POMERANCHUK MECHANISM.
N. S. Craigie, and G. Preparata. Apr 73, 11p
U.S. Sales Only.

Descriptors: (*Proton-proton interactions, *Cross sections), (*Pomeranchuk poles, Proton-proton interactions), Boundary conditions, Coupling, Diagrams, Energy, Exchange interactions, Linear momentum, Particle radii, Pomeranchuk particles, Regge cuts, Regge poles, Renormalization, Series expansion, Singularity, Vertex functions.

For abstract, see NSA 28 06, number 13775.

DESY-73/4/GA PC$3.50/MF$1.45
Deutsches Elektronen-Synchrotron, Hamburg (West Germany).
MEASUREMENT OF DELBRUECK SCATTERING AND OBSERVATION OF PHOTON SPLITTING AT HIGH ENERGIES.
G. Jarlskog, L. Jonsson, S. Pruenster, H. D. Schulz, and H. J. Willutzki. Mar 73, 30p
U.S. Sales Only.

Descriptors: (*Photonuclear reactions, *Delbrueck scattering), (*Copper, Photonuclear reactions), (*Silver, Photonuclear reactions), (*Gold, Photonuclear reactions), Coulomb correction, Differential cross sections, Gev range 01-10, Linear momentum transfer, Photons, Quantum electrodynamics, Uranium.

For abstract, see NSA 28 05, number 11894.

DESY-73/9/GA PC$3.50/MF$1.45
Deutsches Elektronen-Synchrotron, Hamburg (West Germany).
ELECTROPRODUCTION OF PIONS WITH POLARIZED BEAMS AND POLARIZED TARGETS.
A. Bartl, and W. Majerotto. Mar 73, 29p
U.S. Sales Only.

Descriptors: (*Pions plus, *Electroproduction), (*Electron-proton interactions, *Cross sections), Asymmetry, Born approximation, Electrons, Final-state interactions, Neutrons, Particle models, Polarization, Regge poles.

For abstract, see NSA 28 05, number 11687.

FRNC-TH-277/GA PC$5.45/MF$1.45
Paris Univ. (France).
DETERMINATION OF THE POLARIZATION OF THE RECOIL PROTON IN ELASTIC SCATTERING BY POLARIZED TARGETS.
A. Gaidot. 1972, 76p
In French. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Elastic scattering), B codes, Gev range 01-10, Interactions, Pions minus, Pions plus, Polarization, Polarized targets, Programming, Protons, Recoils, Spin.

For abstract, see NSA 28 05, number 11658.

FRNC-TH-304/GA PC$5.45/MF$1.45
Paris Univ. (France).
VARIOUS STUDIES OF THE ELECTROMAGNETIC STRUCTURE OF NUCLEI.
L. Grunbaum. 1972, 99p
In French. U.S. Sales Only.

Descriptors: (*Carbon 13, *Electromagnetic form factors), (*Beryllium 9, Electromagnetic form factors), Dimensions, Dispersion relations, Magnetic moments, Neutrons, Ope potential, Protons, Born approximation, Bound state, Coupling, Electron beams, Energy spectra, Excited states, Inelastic scattering, Linear momentum, Parity, Spin.

For abstract, see NSA 28 05, number 12020.

FRNC-TH-307/GA PC$5.45/MF$1.45
Paris Univ. (France).
DETERMINATION OF ELECTRON ENERGIES IN HEAVY LIQUID BUBBLE CHAMBERS USING A MONTE CARLO METHOD.
P. Van Quaethem. 1972, 93p
In French. U.S. Sales Only.

Descriptors: (*Heavy liquid bubble chambers, *Pair production), (*Electrons, Pair production), (*Positrons, Pair production), Bremsstrahlung, Energy spectra, Monte carlo method.

For abstract, see NSA 28 05, number 11688.

FRNC-TH-308/GA PC$5.45/MF$1.45
Paris Univ. (France).
STUDY OF SEVERAL NUCLEON EXCITATION IN EXP 20 NE AND EXP 24 MG NUCLEI USING (EXP 14 N, EXP 6 LI) REACTIONS.
C. Volant. 1972, 91p
In French. U.S. Sales Only.

Descriptors: (*Carbon 12, Nitrogen 14 reactions), (*Nitrogen 14 reactions, *Transfer reactions), (*Oxygen 16, Nitrogen 14 reactions), (*Magnesium 24, *Energy levels), Cluster model, Cross sections, Direct reactions, Energy resolution, Lithium 6, Mev range 10-100, Neon 20, Particle-hole model, Rotational states, Wave functions, Excited states.

For abstract, see NSA 28 05, number 11834.

FRNC-TH-325/GA PC$5.45/MF$1.45
Paris Univ. (France).
SEARCH FOR DELTA EXP +- MESONS, D EXP 0 AND X EXP 0 IN THE ANNIHILATION OF ANTIPROTONS INTO SEVEN PIONS, AT 1.2 GEV/C.
M. C. Cousinou. 1972, 74p
In French. U.S. Sales Only.

Descriptors: (*Proton-antiproton interactions, *Annihilation), (*Omega-784 resonances, *Particle production), (*Eta-958 resonances, Particle production), Antiparticles, Branching ratio, Cross sections, D-1285 resonances, Delta-966 resonances, Eta mesons, Gev range 01-10, Kaons, Linear momentum, Mass, Particle decay, Particle decay, Pions, Pions minus, Pions neutral, Pions plus, Spectra.

For abstract, see NSA 28 05, number 11648.

FRNC-TH-327/GA PC$5.45/MF$1.45
Paris Univ. (France).
STUDY OF THE POSSIBILITY OF A RHO-OMEGA INTERFERENCE IN THE PI EXP - P IMPLIES PI EXP + PI EXP - N REACTION AT 2.77 GEV/C.
J. Pierrard. 1972, 130p
In French. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Interference), (*Omega-784 resonances, *Decay), (*Rho-765 resonances, Interference), Eigenstates, Electromagnetic interactions, Emission, G-parity invariance, Gev range 01-10, Linear momentum, Mass, Mathematical operators, Neutrons, Pions, Pions minus, Pions plus, Protons, Spectra.

For abstract, see NSA 28 05, number 11738.

FRNC-TH-328/GA PC$5.45/MF$1.45
Paris Univ. (France).
STUDY OF THE K EXP + P IMPLIES K EXP 0 P PI EXP + REACTION AT 2.17 AND 2.34 GEV/C.
H. Pessard. 1972, 127p
In French. U.S. Sales Only.

Descriptors: (*Kaon-proton interactions, *Differential cross sections), (*Delta-1236 resonances, *Density matrix), Gev range 01-10, Kaons neutral, Kaons plus, Linear momentum, Linear momentum transfer, Matrix elements, Pions plus, Protons.

For abstract, see NSA 28 05, number 11659.

FRNC-TH-330/GA PC$5.45/MF$1.45
Paris Univ. (France).
STUDY OF PI EXP - P IMPLIES PI EXP 0 N (PI EXP 0 IMPLIES GAMMA GAMMA) AND PI EXP - P IMPLIES ETA N (ETA IMPLIES GAMMA GAMMA) REACTIONS ON NUCLEI AT 7.82 GEV/C.
P. Le Du. 1971, 53p
In French. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Differential cross sections), (*Pion-nucleon interactions, *Total cross sections), Decay, Emission, Eta mesons, Gev range 01-10, Inelastic scattering, Linear momentum, Neutrons, Nuclei, Photons, Pions minus, Pions neutral, Pions neutral.

For abstract, see NSA 28 05, number 11660.

FRNC-TH-331/GA PC$5.45/MF$1.45
Paris Univ. (France).
STUDY OF THE PI EXP - P IMPLIES N GAMMA REACTION.
O. Le Calvez. 1971, 75p
In French. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Differential cross sections), Corrections, Gev range 01-10, Mev range 100-1000, Neutrons, Photons, Pions minus, Total cross sections.

For abstract, see NSA 28 05, number 11661.

FRNC-TH-332/GA PC$5.45/MF$1.45
Paris Univ. (France).

PROTON ANTIPROTON IMPLIES ETA PI PI (AT REST) ANNIHILATIONS AND MEASUREMENT OF THE DECAY RATIOS OF ETA SUB 0

P. Espigat. 1971, 79p
In French. U.S. Sales Only.

Descriptors: (*Proton-antiproton interactions, *Annihilation), (*Eta mesons, *Particle production), (*A2-1310 resonances, *Mass), Antiparticles, Kaons, Particle widths, Photons, Pions minus, Pions neutral, Pions plus, Rho-765 resonances, Final-state interactions, Branching ratio, Decay.

For abstract, see NSA 28 05, number 11649.

IEA-22/GA PC$3.00/MF$1.45
Instituto de Energia Atomica, Sao Paulo (Brazil).
NUCLEAR PHYSICS RESEARCH WITH THE I.E.A. REACTOR.
J. Goldemberg. Aug 72, 16p
In Portuguese. U.S. Sales Only.

Descriptors: (*Nuclear physics, *Research programs), (*Cadmium 113, Neutron reactions), (*Neutron reactions, *Capture), (*Uranium 238, *Photonuclear reactions), Brazil, Iear-1 reactor, Electrons, Internal conversion, Spectra, Excitation functions, Mev range 01-10, Photoneutrons, Uranium 237, Multiplicity, Neutrons, Photofission.

For abstract, see NSA 28 05, number 11862.

INDC-11-U/GA PC$8.50/MF$1.45
International Nuclear Data Committee.
TECHNICAL MINUTES OF THE FIFTH INDC MEETING, IAEA HEADQUARTERS, VIENNA, AUSTRIA, JULY 17--21, 1972.
R. Joly. Apr 73, 129p
U.S. Sales Only.

Descriptors: (*Iaea, *Meetings), (*Nuclear physics, *Information systems), (*Data, Meetings), Information.

For abstract, see NSA 28 04, number 10484.

INS-583/GA PC$7.50/MF$1.45
Institute of Nuclear Sciences, Lower Hutt (New Zealand).
PROGRESS REPORT 19, JANUARY--JUNE 1972.
Jan 73, 110p
U.S. Sales Only.

Descriptors: (*Nuclear physics, *Research programs), (*Radiation effects, Research programs), (*Geochemistry, Research programs), (*Age estimation, Research programs), Fallout, New zealand, Radioisotopes, Stable isotopes, Capture, Cobalt 55, Gamma radiation, Iron 54, Mev range 01-10, Nuclear reaction yield, Proton reactions.

For abstract, see NSA 28 05, number 11844.

IPNO-TH-73-3/GA PC$3.00/MF$1.45
Paris Univ., Orsay (France). Institut de Physique Nucleaire.
CUTS IN THE ANGULAR-MOMENTUM PLANE AND INCLUSIVE-TYPE SUM RULES.
K. Kang, R. W. Moore, and B. Nicolescu. Feb 73, 9p
U.S. Sales Only.

Descriptors: (*Inclusive interactions, *Regge cuts), Angular momentum, Dual resonance model, Phase space, Scattering amplitudes, Sum rules.

For abstract, see NSA 28 05, number 11710.

IPNO-TH-73-4/GA PC$3.50/MF$1.45
Paris Univ., Orsay (France). Institut de Physique Nucleaire.
NUCLEON--NUCLEON INTERACTION FROM PION--NUCLEON PHASE SHIFT ANALYSIS. THE NN PERIPHERAL PARTIAL WAVES.
R. Vinh Mau, J. M. Richard, B. Loiseau, M. Lacombe, and W. N. Cottingham. 1973, 27p
U.S. Sales Only.

Descriptors: (*Nucleon-nucleon interactions, *Partial waves), Dispersion relations, Interactions, Mandelstam representation, Ope model, Phase shift, Pion-nucleon interactions, Pion-pion interactions, Regge calculus, Scattering, Scattering amplitudes.

For abstract, see NSA 28 05, number 11757.

IPNO-71-9/GA PC$3.00/MF$1.45
Paris Univ., Orsay (France). Institut de Physique Nucleaire.
ESTABLISHMENT OF THE EXISTENCE OF SUPERSOFT NUCLEI.
R. Foucher. Dec 71, 7p
In French. U.S. Sales Only.

Descriptors: (*Heavy nuclei, *Nuclear structure), Energy levels, Instability.

For abstract, see NSA 28 06, number 14124.

IPPJ-138/GA PC$4.00/MF$1.45
Nagoya Univ. (Japan). Inst. Of Plasma Physics.
NOTE ON THE GAUGE INVARIANCE AND THE CONSERVATION LAWS FOR A CLASS OF NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS.
Y. Watanabe. Oct 72, 19p
U.S. Sales Only.

Descriptors: Conservation laws, Differential equations, Gauge invariance, Korteweg-de vries equation, Motion, Nonlinear problems, Variational methods.

For abstract, see NSA 28 06, number 13625.

ITEF-950/GA PC$5.50/MF$1.45
Gosudarstvennyi Komitet Po Ispol'Zovaniyu Atomnoi Energii Sssr, Moscow. Institut Teoreticheskoi I Eksperimental'Noi Fiziki.
DESCRIPTION OF INELASTIC PROCESSES IN A SINGLE-PION EXCHANGE MODEL.
K. G. Boreskov, A. B. Kaidalov, and L. A. Ponomarev. 1972, 70p
In Russian. U.S. Sales Only.

Descriptors: (*Multiperipheral model, *Multiple production), (*Ope model, *Pion-pion interactions), (*Proton-proton interactions, Ope model), (*Pion-proton interactions, Ope model), Cross sections, Energy, Gev range 01-10, Gev range 10-100, Inclusive interactions, Neutrons, Pions, Pions minus, Pions plus, Protons, Regge poles, Scattering amplitudes, Spectra, Total cross sections.

For abstract, see NSA 28 04, number 09399.

JAERI-M-4968/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
COMPILATION OF GAMMA-RAY SPECTRA WITH A GE(LI) DETECTOR (REVISED).
T. Tojo, M. Kondo, M. Hieta, and T. Shiraishi. Sep 72, 42p
In Japanese. U.S. Sales Only.

Descriptors: (*Radioisotopes, *Gamma spectra), (*Fission products, Gamma spectra), (*Activation detectors, Gamma spectra), (*Li-drifted ge detectors, *Efficiency), Burnup, Energy dependence, Gamma spectrometers, Neutron flux, Tables.

For abstract, see NSA 28 04, number 09607.

JEN-257/GA PC$7.75/MF$1.45
Junta de Energia Nuclear, Madrid (Spain). Division de Fisica.
LEVEL SCHEME OF EXP 223 FR.
R. Gaeta, J. A. Gonzalez, L. Gonzalez, and C. Roldan. 1972, 115p
In Spanish. U.S. Sales Only.

Descriptors: (*Actinium 227, *Alpha decay), (*Francium 223, *Energy levels), Alpha spectra, Energy spectra, Gamma spectra, Energy-level transitions, Multipolarity, Nilsson-mottelson model, Parity, Rotational states, Spin, Unified model.

For abstract, see NSA 28 04, number 09665.

JEN-259/GA PC$3.00/MF$1.45
Junta de Energia Nuclear, Madrid (Spain). Division de Fisica.
PROBABILITIES OF NUCLEAR PROCESSES.
C. Sanchez del Rio. 1973, 18p
In Spanish. U.S. Sales Only.

Descriptors: (*Nuclear reactions, *Cross sections), (*Radioisotopes, *Decay), Absorption, Beams, Probability, Statistics, Variations.

For abstract, see NSA 28 05, number 11917.

JINR-D2-7110/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
AUTOMODELITY IN THE LARGE ANGLE ELASTIC SCATTERING AND HADRON STRUCTURE.
V. A. Matveev, R. M. Muradyan, and A. N. Tavkhelidze. 1973, 11p
U.S. Sales Only.

Descriptors: (*Lepton-hadron interactions, *Elastic scattering), (*Hadron-hadron interactions, Elastic scattering), Cross sections, Electrons, Linear momentum transfer, Particle structure, Quarks.

For abstract, see NSA 28 04, number 09385.

JINR-D2-7180/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
JOINT DESCRIPTION OF CHARGE DISTRIBUTIONS AND CORRELATIONS BETWEEN NEUTRAL AND CHARGED PARTICLES IN THE PI EXP - P- AND PI EXP - N-INTERACTIONS AT P = 40 GEV/C.
V. G. Grishin, G. Jancso, S. P. Kuleshov, V. A. Matveev, and A. N. Sissakian. 1973, 12p
In Russian and English. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Charged particles), (*Pion-neutron interactions, Charged particles), Correlations, Distribution, Gev range 10-100, Pions minus.

For abstract, see NSA 28 05, number 11739.

JINR-E1-7024/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
SMALL ANGLE PI EXP - EXP 4 HE ELASTIC SCATTERING AT 3.48 AND 6.13 GEV/C.
A. A. Nomofilov, I. M. Sitnik, L. A. Slepets, and L. N. Strunov. 1973, 11p
U.S. Sales Only.

Descriptors: (*Pion reactions, *Elastic scattering), (*Helium 4, *Nuclear radii), (*Pion-nucleon interactions, Elastic scattering), Differential cross sections, Diffraction models, Gev range 01-10, Linear momentum, Pions minus, Total cross sections.

For abstract, see NSA 28 04, number 09522.

JINR-E11-6969/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.

RECONSTRUCTION OF PARTICLE MULTIPLICITY DISTRIBUTIONS USING THE METHOD OF STATISTICAL REGULARIZATION.
M. Dakowski, Yu. A. Lazarev, V. F. Turchin, and L. S. Turovtseva. 1973, 20p
U.S. Sales Only.

Descriptors: (*Fermium 254, *Spontaneous fission), (*Fermium 256, Spontaneous fission), (*Fermium 257, Spontaneous fission), (*Curium 244, Spontaneous fission), Distribution, Errors, Fission neutrons, Multiplicity, Neutrons, Statistics.

For abstract, see NSA 28 04, number 09667.

JINR-E2-6962/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
POSSIBILITY OF DETERMINATION OF THE COUPLING CONSTANT PI EXP - EXP 3 HE EXP 3 H.
O. V. Dumbrais, F. Nichitiu, and Yu. A. Shcherbakov. 1973, 11p
U.S. Sales Only.

Descriptors: (*Pions minus, *Coupling constants), (*Helium 3, Coupling constants), (*Tritons, Coupling constants), Differential cross sections, Mev range 10-100, Pion reactions, Pions plus.

For abstract, see NSA 28 04, number 09523.

JINR-E2-6978/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
PRODUCTION OF CHARGED PARTICLES IN INTERACTIONS OF PI EXP - MESONS WITH LIGHT NUCLEI AT HIGH ENERGIES.
S. M. Eliseev, V. G. Grishin, Sh. V. Inogamov, and J. M. Kohli. 1973, 15p
U.S. Sales Only.

Descriptors: (*Carbon, *Pion reactions), Bubble chambers, Charged particles, Distribution, Gev range 10-100, Monte carlo method, Multiplicity, Nuclear cascades, Nuclear emulsions, Particle production, Pions minus.

For abstract, see NSA 28 04, number 09331.

JINR-E2-6982/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
ELECTROMAGNETIC PION RADIUS COMING FROM PI EXP +- EXP 4 HE SCATTERING.
F. Nichitiu, and Yu. A. Shcherbakov. 1973, 12p
U.S. Sales Only.

Descriptors: (*Pions, *Particle radii), Elastic scattering, Electromagnetic fields, Energy, Helium 4, Phase shift, Pion reactions, Pions minus, Pions plus, Total cross sections.

For abstract, see NSA 28 04, number 09349.

JINR-E2-7028/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
ELECTROMAGNETIC MASS DIFFERENCES OF NUCLEONS AND SUM RULES IN THE AUTOMODEL REGION.
B. A. Magradze, V. A. Matveev, A. N. Tavkhelidze, D. Robaschik, and E. Wieczorek. 1973, 9p
U.S. Sales Only.

Descriptors: (*Nucleons, *Mass difference), (*Photon-nucleon interactions, *Structure functions), Compton effect, Dyson representation, Inelastic scattering, Scattering amplitudes, Sum rules, Virtual particles.

For abstract, see NSA 28 04, number 09350.

JINR-E2-7041/GA PC$3.50/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
STRAIGHT LINE PATH METHOD AND THE EIKONAL PROBLEM.
S. P. Kuleshov, V. A. Matveev, A. N. Sisakyan, M. A. Smodyrev, and A. N. Tavkhelidze. 1973, 27p
U.S. Sales Only.

Descriptors: (*Nucleon-nucleon interactions, *Scattering amplitudes), Eikonal approximation, Ladder approximation.

For abstract, see NSA 28 04, number 09422.

JINR-E2-7050/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
RELATIVISTIC QUARK MODEL OF MESONS IN INFINITE MOMENTUM FRAME.
A. A. Atanasov. 1973, 8p
U.S. Sales Only.

Descriptors: (*Mesons, *Quark model), Bound state, Perturbation theory, Regge trajectories.

For abstract, see NSA 28 04, number 09400.

JINR-E2-7051/GA PC$3.50/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
AUTOMODEL BEHAVIOUR OF THE VIRTUAL COMPTON SCATTERING AMPLITUDE IN THE FRAMEWORK OF THE DYSON--JOST--LEHMANN REPRESENTATION.
V. A. Matveev, D. Robaschik, and E. Wieczorek. 1973, 27p
U.S. Sales Only.

Descriptors: (*Compton effect, *Scattering amplitudes), (*Electron-proton interactions, Scattering amplitudes), Dyson representation, Light cone, Matrix elements.

For abstract, see NSA 28 04, number 09351.

JINR-E2-7122/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
DUAL MODELS IN FORMALISM OF RANDOM PROCESSES.
V. M. Mal'tsev, and N. K. Dushutin. 1973, 7p
U.S. Sales Only.

Descriptors: (*Hadrons, *Multiple production), (*Dual resonance model, *Exclusive interactions), Distribution, Probability, Randomness.

For abstract, see NSA 28 05, number 11711.

JINR-E4-7054/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
MODEL FOR THE DESCRIPTION OF THE FRAGMENTATION OF SINGLE- AND MANY-PARTICLE STATES OVER THE LEVELS OF AN ODD SPHERICAL NUCLEUS.
A. I. Vdovin, and V. G. Solov'ev. 1973, 15p
U.S. Sales Only.

Descriptors: (*Even-odd nuclei, *Energy levels), (*Odd-even nuclei, Energy levels), Excitation, Interference, Nuclear structure, Phonons, Quasi particles, Single-particle model, Spherical model.

For abstract, see NSA 28 04, number 09700.

JINR-E4-7069/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
SOME APPROACHES FOR SOLVING THE THREE-BODY PROBLEM AT POSITIVE ENERGY.
V. B. Belyaev, V. N. Efimov, E. G. Tkachenko, and H. Schulz. 1973, 20p
U.S. Sales Only.

Descriptors: (*Neutron-deuteron interactions, *Three-body problem), Integral equations, Singularity.

For abstract, see NSA 28 04, number 09423.

JINR-E7-6970/GA PC$3.50/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
TRANSFER REACTIONS IN THE INTERACTION OF EXP 40 AR WITH EXP 232 TH.
A. G. Artukh, G. F. Gridnev, V. L. Mikheev, V. V. Volkov, and J. Wilczynski. 1973, 28p
U.S. Sales Only.

Descriptors: (*Argon 40 reactions, *Transfer reactions), (*Thorium 232, Argon 40 reactions), Angular distribution, Angular momentum, Cross sections, Energy spectra, Light nuclei, Mev range 100-1000, Q-value, Total cross sections.

For abstract, see NSA 28 04, number 09666.

JINR-P1-6993/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
SLOPE PARAMETER AND THE REAL PART OF THE P--N ELASTIC SCATTERING AMPLITUDE IN THE ENERGY RANGE OF 10 TO 70 GEV.
G. G. Beznogikh, A. Bujak, N. K. Zhidkov, V. I. Zayachki, and L. S. Zolin. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*Proton-neutron interactions, *Differential cross sections), Elastic scattering, Gev range 10-100, Glauber theory, Proton-deuteron interactions, Proton-proton interactions, Scattering amplitudes.

For abstract, see NSA 28 04, number 09325.

JINR-P1-7004/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
DEUTERON NUCLEAR FORM FACTOR FROM THE EXPERIMENTAL DATA ON THE P--D SMALL ANGLE ELASTIC SCATTERING AND DATA ON THE ELECTROMAGNETIC DEUTERON FORM FACTOR.
L. S. Zolin, V. A. Nikitin, 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*Deuterons, *Electromagnetic form factors), Elastic scattering, Form factors, Gev range 10-100, Glauber theory, Proton-deuteron interactions.

For abstract, see NSA 28 04, number 09326.

JINR-P1-7033/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
RESONANCE WIDTH MEASUREMENT BY INTERFERENCE METHOD.
S. F. Berezhnev, L. S. Vertogradov, and G. I. Kopylov. 1973, 12p
In Russian. U.S. Sales Only.

Descriptors: (*Nuclei, *Energy levels), Level widths, Nuclear structure, Numerical solution, Resonance.

For abstract, see NSA 28 04, number 09701.

JINR-P1-7057/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
IS THE DYNAMICAL INFLUENCE ON THE NEUTRON DECAY POSSIBLE.
V. V. Glagolev, and K. D. Tolstov. 1973, 7p
In Russian. U.S. Sales Only.

Descriptors: (*Neutrons, *Decay), (*Heavy nuclei, Neutron reactions), (*Neutron reactions, *Multiple scattering), Antineutrinos, Bubble chambers, Elastic scattering, Electrons, Inelastic scattering, Particle production, Pions, Proton-deuteron interactions, Proton-neutron interactions, Protons.

For abstract, see NSA 28 06, number 13608.

JINR-P1-7062/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
ESTIMATE OF THE HISTOGRAM DISTRIBUTION PARAMETERS.
S. F. Berezhnev. 1973, 8p
In Russian. U.S. Sales Only.

Descriptors: (*High energy physics, *Statistics), Data, Distribution.

For abstract, see NSA 28 04, number 09341.

JINR-P1-7063/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
CHARGED PARTICLE EMISSION AT MU EXP - -MESON CAPTURE BY PHOTOEMULSION NUCLEI.
Yu. A. Batusov, S. A. Bunyatov, L. Vizireva, G. R. Gulkanyan, and F. Mirsalikhova. 1973, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Muon reactions, *Capture), (*Carbon, Muon reactions), (*Nitrogen, Muon reactions), (*Oxygen, Muon reactions), Bromine, Charged particles, Distribution, Emission, Multiplicity, Nuclear emulsions, Probability, Silver.

For abstract, see NSA 28 04, number 09534.

JINR-P1-7103/GA PC$3.25/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
SOME CHARACTERISTICS OF INCLUSIVE REACTIONS PI EXP - P IMPLIES PI EXP +- + ..., PI EXP - N IMPLIES PI EXP +- + .. P = 40 GEV/C.
A. U. Abdurakhimov, N. Angelov, and K. P. Vishnevskaya. 1973, 24p
In Russian. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Inclusive interactions), (*Pion-neutron interactions, Inclusive interactions), Cross sections, Gev range 10-100, Proton-proton interactions, Scale invariance.

For abstract, see NSA 28 05, number 11662.

JINR-P1-7115/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
NEUTRON SPECTRA FROM THE REACTIONS OF ABSORPTION OF NEGATIVE MUONS BY HEAVY NUCLEI AND THE RESONANCE MODEL OF NUCLEAR REACTIONS.
V. S. Evseev, and T. N. Mamedov. 1973, 20p
In Russian. U.S. Sales Only.

Descriptors: (*Iodine 127, Muon reactions), (*Thorium 232, Muon reactions), (*Muon reactions, *Absorption), (*Tellurium 126, *Nuclear temperature), Actinium 231, Muons minus, Neutron spectra, Neutrons, Nuclear reactions, Reliability, Resonance, Statistical models.

For abstract, see NSA 28 06, number 14125.

JINR-P14-7060/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
PERSPECTIVES OF PRACTICAL APPLICATION OF HEAVY ION BEAMS.
G. N. Flerov, and V. S. Barashenkov. 1973, 18p
In Russian. U.S. Sales Only.

Descriptors: (*Ion beams, *Uses), Heavy ions, Nuclear structure.

For abstract, see NSA 28 04, number 09195.

JINR-P15-7072/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Neutron Physics.
GAMMA -DECAY OF EXP 61 CU ANALOG RESONANCES.
O. E. Kraft, P. P. Lebedev, Yu. V. Naumov, and I. V. Sizov. 1973, 19p
In Russian. U.S. Sales Only.

Descriptors: (*Copper 61, *Beta-plus decay), (*Nickel 60, Proton reactions), (*Proton reactions, *Capture), Energy-level transitions, Fine structure, Ft value, Isobaric analogs, Isospin, Level widths, Pairing interactions, Probability, Spin, Excitation functions, Gamma radiation, Gamma spectra, Mev range 01-10.

For abstract, see NSA 28 05, number 11853.

JINR-P15-7128/GA PC$3.25/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Neutron Physics.
INVESTIGATION OF THE REACTION EXP 15 N(T, ALPHA) EXP 14 C.
M. Abuzeid, 1973, 21p
In Russian. U.S. Sales Only.

Descriptors: (*Nitrogen 15, Triton reactions), (*Triton reactions, *Pickup reactions), (*Carbon 14, *Energy levels), Alpha particles, Alpha spectra, Angular distribution, Differential cross sections, Dwba, Excitation functions, Kev range 100-1000, Mev range 01-10, Total cross sections, Transfer reactions, Spectroscopic factors.

For abstract, see NSA 28 06, number 14001.

JINR-P2-6867/GA PC$27.50/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr).
SCHOOL OF HIGH-ENERGY PHYSICS FOR YOUNG SCIENTISTS, SUKHUMI, 5--16 OCTOBER 1972.
V. A. Matveev. 1972, 506p
In Russian. U.S. Sales Only.

Descriptors: (*Elementary particles, *Interactions), Lectures.

For abstract, see NSA 28 06, number 13626.

JINR-P2-7032/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
ASYMPTOTIC RELATIONS BETWEEN THE STRUCTURE FUNCTIONS IN INCLUSIVE PROCESSES FOR PARTICLES RELATED TO ONE ISOMULTIPLET.
V. G. Grishin. 1973, 9p
In Russian. U.S. Sales Only.

Descriptors: (*Inclusive interactions, *Structure functions), Asymptotic solutions, Multiplets.

For abstract, see NSA 28 04, number 09342.

JINR-P2-7037/GA PC$3.25/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
MULTIPOLE ANALYSIS OF THE PROCESS PI EXP - P IMPLIES NE EXP + E EXP - IN THE BORN APPROXIMATION.
S. G. Petrova. 1973, 23p
In Russian. U.S. Sales Only.

Descriptors: (*Pion-proton interactions, *Scattering amplitudes), Born approximation, Cross sections, Electrons, Form factors, Multipoles, Neutrons, Nucleons, Particle production, Pions, Pions minus, Positrons.

For abstract, see NSA 28 04, number 09409.

JINR-P2-7086/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
PIONIC COUPLING CONSTANT AND PIONIC RADIUS OF EXP 3 HE.
B. Z. Kopeliovich. 1973, 14p
In Russian. U.S. Sales Only.

Descriptors: (*Helium 3, *Form factors), (*Pions, *Coupling constants), Dispersion relations, Electric charges, Nucleons, Particle radii.

For abstract, see NSA 28 05, number 11805.

JINR-P2-7089/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
ELASTIC P-- EXP 3 HE SCATTERING IN GLAUBER THEORY WITH SPIN.
G. I. Lykasov, and A. V. Tarasov. 1973, 10p
In Russian. U.S. Sales Only.

Descriptors: (*Proton reactions, *Elastic scattering), (*Helium 3, Proton reactions), Differential cross sections, Glauber theory, Nucleon-nucleon interactions, Scattering amplitudes, Spin.

For abstract, see NSA 28 06, number 13992.

JINR-P2-7090/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
HADRON INTERACTION MODELS OF HIGH MULTIPLICITY.
N. K. Dushutin, and V. M. Mal'tsev. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*Hadron-hadron interactions, *Particle models), (*Feynman gas model, Hadron-hadron interactions), Correlations, Kinetic equations, Multiple production, Multiplicity, Scaling laws.

For abstract, see NSA 28 05, number 11712.

JINR-P2-7091/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
TRANSFORMATION OF THE COORDINATE INVERSION IN THE CONFORMAL INVARIANCE THEORY.
1973, 13p
In Russian. U.S. Sales Only.

Descriptors: (*Conformal groups, *Nonlinear problems), (*Conformal invariance, *Coordinates), Mathematical operators.

For abstract, see NSA 28 04, number 09430.

JINR-P2-7120/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
MUTUAL COHERENCE OF INCOHERENTLY GENERATED MESONS.
G. I. Kopylov. 1973, 12p
In Russian. U.S. Sales Only.

Descriptors: (*Mesons, *Coherent production), (*Hadrons, Coherent production), Coherent scattering, Differential equations, Optical theorem.

For abstract, see NSA 28 05, number 11681.

JINR-P2-7142/GA PC$3.25/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
MODIFIED SERIES OF PERTURBATION THEORY FOR THE CASE OF SCATTERING ON SINGULAR NONRENORMALIZED POTENTIAL.
V. Sh. Gogokhiya, and A. T. Filippov. 1973, 22p
In Russian. U.S. Sales Only.

Descriptors: (*Perturbation theory, *Potential scattering), Quantum field theory, Renormalization, Schroedinger equation.

For abstract, see NSA 28 05, number 11780.

JINR-P2-7187/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
STATISTICAL THEORY OF INELASTIC PROCESSES WITH SU SUB 6 -MULTIPLETS.
V. S. Barashenkov, and Kh. M. Beshtoev. 1973, 15p
In Russian. U.S. Sales Only.

Descriptors: (*Multiple production, *Su-6 groups), (*Proton-antiproton interactions, *Annihilation), (*Antiproton-neutron interactions, Annihilation), Antihyperons, Antikaons neutral, Gev range 10-100, Gev range 100-1000, Inelastic scattering, Kaons, Multiplets, Particle production, Pions, Statistics, Statistics, Su-3 groups.

For abstract, see NSA 28 06, number 13812.

JINR-P2-7222/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
NEW TYPE OF SUM RULES FOR PI N-SCATTERING IN SUBTHRESHOLD REGION.
V. P. Gerdt, and V. A. Meshcheryakov. 1973, 15p
In Russian. U.S. Sales Only.

Descriptors: (*Pion-nucleon interactions, *Sum rules), Crossing symmetry, Energy, Partial waves.

For abstract, see NSA 28 06, number 13740.

JINR-P4-6960/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
INFLUENCE OF THE FINITE SIZE OF ALPHA-PARTICLE ON ABSOLUTE ALPHA-DECAY WIDTHS FOR SPHERICAL NUCLEI.
S. G. Kadmenskii, G. Stratan, V. I. Furman, and S. Kholan. 1973, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Alpha decay, *Probability), Alpha particles, Decay amplitudes, Size, Spherical model.

For abstract, see NSA 28 04, number 09702.

JINR-P4-6991/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
SAXON--WOODS POTENTIAL USED FOR DESCRIPTION OF THE BOUND STATES WHEN STUDYING THE PROCESS MU EXP - + (A,Z) IMPLIES (A-1, Z-1) + N + NU .
F. A. Gareev, and Yu. A. Salganik. 1973, 12p
In Russian. U.S. Sales Only.

Descriptors: (*Muon reactions, *Bound state), Angular distribution, Asymmetry, Energy spectra, Muons minus, Nuclei, Nucleons, Woods-saxon potential.

For abstract, see NSA 28 04, number 09703.

JINR-P4-7055/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Neutron Physics.
REFLECTION OF ULTRACOLD NEUTRONS FROM ROUGH SURFACE. ROUGHNESS EFFECT ON ABSORPTION COEFFICIENT.
V. K. Ignatovich. 1973, 15p
In Russian. U.S. Sales Only.

Descriptors: (*Cold neutrons, *Reflection), Absorption, Angular distribution, Roughness, Surfaces.

For abstract, see NSA 28 04, number 09507.

JINR-P4-7144/GA PC$3.50/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
CONSTRUCTION OF COLLECTIVE HAMILTONIAN IN MICROSCOPIC NUCLEAR MODEL.
R. V. Dzholos, F. Denau, and D. Jansen. 1973, 27p
In Russian. U.S. Sales Only.

Descriptors: (*Collective model, *Hamiltonians), (*Deformed nuclei, *Energy levels), Excitation, Potential energy, Quadrupoles, Residual interactions.

For abstract, see NSA 28 06, number 14126.

JINR-P6-7003/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
LEVELS IN EXP 209 AT, EXP 207 AT, AND EXP 205 AT.
T. Kempisty, A. Korman, T. Morek, L. K. Peker, and 1973, 20p
In Russian. U.S. Sales Only.

Descriptors: (*Radon 205, *Electron capture decay), (*Radon 209, Electron capture decay), (*Radon 207, Electron capture decay), (*Astatine 205, *Energy levels), Coincidence spectrometry, Energy spectra, Gamma radiation, Gamma spectra, Electrons, K conversion, Astatine 209, Branching ratio, Energy-level transitions, Parity, Spin, Astatine 207, Multipolarity.

For abstract, see NSA 28 04, number 09655.

JINR-P6-7007/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
PROBABILITIES OF GAMMA -TRANSITIONS IN EXP 163 EXP 165 ER.
R. Ion-Mihai, N. Z. Marupov, V. A. Morozov, T. M. Muminov, and H. Fuia. 1973, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Erbium 163, *Energy-level transitions), (*Erbium 165, Energy-level transitions), Coriolis force, Deformed nuclei, Energy levels, Lifetime, Mixing ratio, Multipolarity, Nilsson-mottelson model, Pairing interactions, Parity, Probability, Quadrupole moments, Spin.

For abstract, see NSA 28 04, number 09635.

JINR-P7-7022/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
COULOMB EXCITATION OF SPONTANEOUSLY FISSIONING ISOMERS BY HEAVY IONS.
Yu. P. Gangrskii, B. N. Markov, 1973, 12p
In Russian. U.S. Sales Only.

Descriptors: (*Uranium 238, Carbon 12 reactions), (*Carbon 12 reactions, *Inelastic scattering), (*Heavy ion reactions, Inelastic scattering), Coulomb excitation, Cross sections, Fission isomers, Xenon 136.

For abstract, see NSA 28 04, number 09668.

JINR-P7-7108/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
APPLICATION OF THE JACKSON--SIKKELAND METHOD IN CALCULATING THE PRODUCTION CROSS SECTIONS FOR SUPERHEAVY ELEMENTS.
A. S. Il'inov. 1973, 14p
In Russian. U.S. Sales Only.

Descriptors: (*Trans 104 elements, *Nuclear reaction yield), (*Heavy ion reactions, *Fusion reactions), (*Heavy nuclei, Heavy ion reactions), Cross sections, Excitation functions, Neutrons.

For abstract, see NSA 28 06, number 14100.

JINR-P7-7165/GA PC$6.25/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
FORMATION AND DECAY OF COMPOUND NUCLEI IN THE HEAVY ION INDUCED REACTIONS.
V. S. Barashenkov, F. G. Zheregi, A. S. Il'inov, and V. D. Toneev. 1973, 82p
In Russian. U.S. Sales Only.

Descriptors: (*Heavy ion reactions, Compound nucleus reactions), (*Compound nucleus reactions, *Statistical models), Accuracy, Angular distribution, Compound nuclei, Cross sections, Excitation functions, Level widths, Nuclear reaction kinetics.

For abstract, see NSA 28 06, number 14127.

JINR-P7-7168/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Reactions.
REGULARITIES OF NUCLEAR PRODUCTION IN THE REACTIONS WITH KR AND XE IONS.
Yu. Ts. Oganesyan, Yu. E. Penionzhkevich, 1973, 16p
In Russian. U.S. Sales Only.

Descriptors: (*Heavy ion reactions, *Fission), (*Tantalum 181, Heavy ion reactions), (*Gold 197, Heavy ion reactions), (*Uranium 238, Heavy ion reactions), Argon 40, Krypton 84, Reaction kinetics, Transfer reactions, Xenon 136.

For abstract, see NSA 28 06, number 14080.

KFK-1518/GA PC$3.00/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Angewandte Kernphysik.
TOTAL NEUTRON CROSS SECTION OF BORON 10 BETWEEN 90 AND 420 KEV.
R. R. Spencer, H. Beer, and F. H. Froehner. Apr 73, 8p EANDC(E)-147(AL)
U.S. Sales Only.

Descriptors: (*Boron 10, Neutron reactions), (*Neutron reactions, *Total cross sections), Absorption, Accuracy, Kev range 10-100, Kev range 100-1000, Time-of-flight method, Transmission.

For abstract, see NSA 28 05, number 11812.

KFK-1770/GA PC$4.25/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Angewandte Kernphysik.
STUDY OF THE DE-EXCITATION OF PRIMARY FISSION FRAGMENTS FROM THE NEUTRON-INDUCED FISSION OF EXP 235 U.
T. A. Khan, D. Hofmann, and F. Horsch. Apr 73, 45p
U.S. Sales Only.

Descriptors: (*Uranium 235, Neutron reactions), (*Neutron reactions, *Thermal fission), (*Fission fragments, *Energy-level transitions), Internal conversion, Electrons, Gamma spectra, Spectra, Thermal neutrons, De-excitation, Energy, Energy levels, Even-even nuclei, Gamma cascades, Mixing ratio, Multipolarity, Nuclear deformation.

For abstract, see NSA 28 05, number 11895.

KFK-1772/GA PC$6.25/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Angewandte Kernphysik.
MEASUREMENT OF THE NEUTRON FISSION CROSS SECTION OF EXP 236 U BETWEEN 0.5 AND 1.2 MEV.
F. Kaeppeler. Apr 73, 81p
In German. U.S. Sales Only.

Descriptors: (*Uranium 235, *Neutron reactions), Compound nuclei, Cross sections, Deformed nuclei, Energy, Fast fission, Kev range 100-1000, Mev range 01-10, Uranium 236.

For abstract, see NSA 28 06, number 14101.

KFK-1783/GA PC$10.25/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Zyklotron-Laboratorium.
EXPERIMENTS ON THE KARLSRUHE CYCLOTRON IN THE YEAR 1972.
H. Rebel, and G. Schatz. Mar 73, 164p
In German. U.S. Sales Only.

Descriptors: (*Karlsruhe cyclotron, *Research programs), (*Nuclear physics, Research programs), Nuclear medicine, Radiochemistry, Spectroscopy.

For abstract, see NSA 28 05, number 11806.

KR-148/GA PC$3.00/MF$1.45
Institutt for Atomenergi, Kjeller (Norway).
PROMPT NEUTRONS FROM FISSION.
K. Skarsvag. Jan 73, 9p
U.S. Sales Only.

Descriptors: (*Californium 252, *Spontaneous fission), (*Neutron reactions, *Fission), (*Uranium 235, Neutron reactions), Angular distribution, Distribution, Energy spectra, Least square fit, Prompt neutrons, Statistical models, Velocity.

For abstract, see NSA 28 05, number 11896.

LA-UR-73-489/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
EXPLOSIVE CARBON BURNING.
W. M. Howard. 1973, 10p CONF-730415-1
Contract W-7405-eng-36

Descriptors: (*Carbon 12, Carbon 12 reactions), (*Carbon 12 reactions, *Fusion reactions), (*Carbon 12 beams, Fusion reactions), (*Neon 20, *Abundance), Aluminium, Isotope ratio, Magnesium 24, Magnesium 25, Magnesium 26, Nuclear reactions, Nucleosynthesis, Quantity ratio, Sodium 23, Sulfur 36, Thermonuclear reactions.

For abstract, see NSA 28 04, number 08909.

LA-UR-73-517/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
TRANSPORT THEORY NUMERICAL METHODS.
K. D. Lathrop. 1972, 10p CONF-730414-3
Contract W-7405-eng-36

Descriptors: (*Neutron transport theory, *Numerical solution), (*Neutron diffusion equation, Numerical solution), Finite element method, Integral equations, Monte carlo method, Spherical harmonics method.

For abstract, see NSA 28 04, number 09509.

LA-UR-73-838/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
DEVELOPMENTS IN AREAS OF ON-LINE FISSION-YIELD AND DIRECT MASS MEASUREMENTS AT THE LOS ALAMOS SCIENTIFIC LABORATORY.
S. J. Balestrini, and L. Forman. 1973, 6p CONF-730618-4

Descriptors: (*Uranium 238, Neutron reactions), (*Neutron reactions, *Fission), (*Neutron beams, Fission), (*Targets, *Safety), Cesium isotopes, Fission neutrons, Fission yield, Capsules, Radiation protection, Radioisotopes, Uranium 235.

For abstract, see NSA 28 06, number 14102.

LA-5221/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
EVALUATION OF THE RADIATIVE-CAPTURE CROSS SECTION FOR TUNGSTEN.
J. J. Devaney. May 73, 22p
Contract W-7405-eng-36

Descriptors: (*Tungsten, *Neutron reactions), (*Tungsten 182, Neutron reactions), (*Tungsten 183, Neutron reactions), (*Tungsten 184, Neutron reactions), Capture, Excitation functions, Gamma radiation, Kev range 01-10, Kev range 10-100, Kev range 100-1000, Mev range 01-10, Mev range 10-100, Neutron beams, Nuclear reactions, Tungsten 186, Tungsten 187, Tungsten 185.

For abstract, see NSA 28 04, number 09636.

LA-5230-T/GA PC$7.60/MF$1.45
Los Alamos Scientific Lab., N. Mex.
STUDY OF THE (PI EXP + ,P) AND (PI EXP + ,PP) REACTIONS ON SELECTED LIGHT NUCLEI.
E. D. Arthur. May 73, 239p
Contract W-7405-eng-36

Descriptors: (*Pion reactions, *Capture), (*Lithium 6, Pion reactions), (*Nitrogen 14, Pion reactions), (*Oxygen 16, Pion reactions), Angular distribution, Beryllium 9, Carbon 12, Cross sections, Energy spectra, Linear momentum, Pions plus, Protons.

For abstract, see NSA 28 06, number 14002.

LA-5241-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
PHOTON EMISSION FROM GASES INDUCED BY TRITIUM BETA DECAY.
C. E. III Ragan. Apr 73, 7p
Contract W-7405-eng-36

Descriptors: (*Tritium, *Beta-minus decay), (*Deuterium, Electron collisions), (*Neon, Electron collisions), (*Electron collisions, *Excitation), Electron beams, Emission, Gases, Photodetectors, Photons, Spectra, Visible radiation.

For abstract, see NSA 28 05, number 11611.

LA-5277-MS/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
SPECIFICATION OF A GENERALLY USEFUL MULTIGROUP STRUCTURE FOR NEUTRON TRANSPORT.
C. R. Weisbin, and R. J. LaBauve. May 73, 11p
Contract W-7405-eng-36

Descriptors: Epithermal neutrons, Ev range, Fast neutrons, Intermediate neutrons, Kev range, Mev range, Multigroup theory.

For abstract, see NSA 28 04, number 09508.

LAL-1266/GA PC$11.75/MF$1.45
Paris Univ., Orsay (France).
CONTRIBUTION OF THE PHI MESON TO THE POLARIZATION OF VACUUM BY THE STUDY OF THE REACTION E EXP + E EXP - IMPLIES MU EXP + MU EXP - .
F. Fulda. Apr 73, 195p
In French. U.S. Sales Only.

Descriptors: (*Phi-1019 resonances, *Decay), (*Electron-positron interactions, *Vacuum polarization), Branching ratio, Colliding beams, Cross sections, Electroproduction, Muons minus, Muons plus, Pair production.

For abstract, see NSA 28 06, number 13603.

LBL-1777/GA PC$3.50/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
ZEROS IN PI PI SCATTERING.
M. R. Pennington. 11 Apr 73, 28p CONF-730319-1
Contract W-7405-eng-48

Descriptors: (*Pions, *Pion beams), (*Pion-pion interactions, *Scattering amplitudes), Mandelstam representation, Singularity.

For abstract, see NSA 28 04, number 09401.

LBL-1798/GA PC$4.00/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
SUCCESSIVE POLARIZATION MEASUREMENTS ON AN IMPROPER MIXTURE.
M. L. Richardson, and J. F. Clauser. May 73, 10p
Contract W-7405-eng-48

Descriptors: (*Mercury, *Energy-level transitions), Elementary particles, Mercury 202, Photons, Polarization, Quantum mechanics, Spin, Vectors.

For abstract, see NSA 28 05, number 12567.

LFEN-RI-5/GA PC$3.00/MF$1.45
Junta de Energia Nuclear, Sacavem (Portugal). Laboratorio de Fisica E Engenharia Nucleares.
FORTRAN PROGRAM LFEN-RE-1. DETERMINATION OF THE HALF LIFES OF A RADIOACTIVE NUCLIDE BY DIRECT FITTING OF AN EXPONENTIAL TO EXPERIMENTAL KOINTS.
I. M. C. Goncalves. 1972, 14p
In Portuguese. U.S. Sales Only.

Descriptors: (*Computer codes, *L codes), (*Radioisotopes, *Decay), Fortran, Half-life, Least square fit.

For abstract, see NSA 28 04, number 09608.

LYCEN-7261/GA PC$5.00/MF$1.45
Lyon Univ. (France). Institut de Physique Nucleaire.
PROGRAMS FOR THEORETICAL CALCULATIONS OF CERTAIN SIMPLIFIED PERIODIC STRUCTURES.
G. Voisin. Sep 72, 56p
In French. U.S. Sales Only.

Descriptors: (*Drift tubes, *Computer codes), Coupling, Eigenfunctions, Fortran, Linear accelerators, Magnetic fields, Programming.

For abstract, see NSA 28 04, number 08871.

LYCEN-7268/GA PC$3.25/MF$1.45
Lyon Univ. (France). Institut de Physique Nucleaire.
FINAL STATE N-P INTERACTION IN EXP 2 H(D,PN) EXP 2 H, EXP 4 HE(D,PN) EXP 4 HE, EXP 6 LI(D,PN) EXP 6 LI, AND EXP 3 HE(D,PN) EXP 3 HE REACTIONS.
M. Chemarin, J. P. Burq, J. C. Cabrillat, and B. Ille. Nov 72, 21p
In French. U.S. Sales Only.

Descriptors: (*Deuteron reactions, *Breakup reactions), (*Deuterium, Deuteron reactions), (*Helium 4, Deuteron reactions), (*Lithium 6, Deuteron reactions), Final-state interactions, Helium 3, Mev range 10-100, Neutrons, Proton-neutron interactions, Protons.

For abstract, see NSA 28 04, number 09327.

N-72-29705/GA PC$4.00/MF$1.45
Alabama a and M Univ., Normal (Usa).
COMPUTER CODE FOR PREDICTING GAMMA PRODUCTION CROSS SECTIONS BY NEUTRON INELASTIC SCATTERING FROM LIGHT NUCLEI. FINAL REPORT.
M. C. George. Jun 72, 45p NASA-CR-127781

Descriptors: (*Light nuclei, *Neutron reactions), (*Oxygen 16, Neutron reactions), (*Neutron beams, *Inelastic scattering), Computer codes, Cross sections, Fast neutrons, Gamma cascades, Gamma radiation, L codes, Nuclear reactions, Optical models.

For abstract, see NSA 28 06, number 14003.

N-72-30618/GA PC$7.60/MF$1.45
Teledyne Brown Engineering, Huntsville, Ala. (Usa).
NONELASTIC NUCLEAR REACTIONS AND ACCOMPANYING GAMMA RADIATION. FINAL REPORT.
R. Snow, H. R. Rosner, M. C. George, and J. D. Hayes. Sep 71, 237p NASA-CR-121023, SE-SSL-1407
Contract NAS8-25534

Descriptors: (*Aluminium 27, *Neutron reactions), (*Iron 56, Neutron reactions), (*Silicon 28, Neutron reactions), (*Lead 208, Neutron reactions), Compound nucleus reactions, Computer codes, Cross sections, Inelastic scattering, Neutron beams, Nuclear reactions, Statistical models.

For abstract, see NSA 28 05, number 11918.

N-72-32679/GA PC$4.00/MF$1.45
National Aeronautics and Space Administration, Langley Station, VA. Langley Research Center.
COMPARISON OF EXACT AND APPROXIMATE EVALUATIONS OF THE SINGLE-SCATTERING INTEGRAL IN NUCLEON--DEUTERON ELASTIC SCATTERING.
J. W. Wilson. Oct 72, 20p NASA-TN-D-6884, L-8369

Descriptors: (*Neutron-deuteron interactions, *Elastic scattering), (*Proton-deuteron interactions, Elastic scattering), (*Deuterons, *Nucleon beams), Errors, Integrals, S waves.

For abstract, see NSA 28 04, number 09424.

N-73-14735/GA PC$4.00/MF$1.45
Illinois Univ., Urbana. Dept. Of Physics.
INCLUSIVE VECTOR MESON PRODUCTION AT SMALL T IN THE DUAL RESONANCE MODEL.
J. Randa. 1972, 31p ILL-(TH)-72-11

Descriptors: (*Dual resonance model, *Inclusive interactions), (*Vector mesons, *Particle production), Cross sections, Density matrix, Energy, Linear momentum transfer, Matrix elements, Missing mass.

For abstract, see NSA 28 04, number 09386.

N-73-16665/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
COMPARISON OF THE RESULTS OF CALCULATIONS DONE AT DIFFERENT LABORATORIES WITH EACH OTHER AND WITH EXPERIMENTS ON THE SECONDARY PROTON AND NEUTRON SPECTRA FROM PROTONS AT 140 AND 160 MEV ON NUCLEI.
H. W. Bertini. 28 Jul 66, 32p NASA-CR-130347

Descriptors: (*Proton reactions, *Knock-out reactions), Energy spectra, Mev range 100-1000, Neutron spectra, Nuclei, Protons.

For abstract, see NSA 28 05, number 11919.

NP-19670/GA PC$5.45/MF$1.45
Interuniversitair Reactor Instituut, Delft (Netherlands).
ANNUAL REPORT, 1971--1972.
1972, 89p
In Dutch. U.S. Sales Only.

Descriptors: (*Neutron diffraction, *Research programs), (*Moessbauer effect, Research programs), (*Neutron spectrometers, Research programs), (*Athene reactor, Research programs), Activation analysis, Dosimetry, Inelastic scattering, Netherlands, Neutron reactions, Radiation chemistry, Radiation protection, Radiochemistry, Radioisotopes, Subcritical assemblies, Uses, Waste management.

For abstract, see NSA 28 05, number 12076.

NP-19781/GA PC$6.50/MF$1.45
Technische Hogeschool, Delft (Netherlands).
SPIN ASSIGNMENTS IN THE TRANSITIONAL NUCLEI EXP 215 PO, EXP 219 RN, AND EXP 223 RA FROM ALPHA--GAMMA DIRECTIONAL CORRELATION MEASUREMENTS.
W. H. A. Hesselink. 1972, 88p
U.S. Sales Only.

Descriptors: (*Radium 223, *Alpha decay), (*Radon 219, Alpha decay), (*Polonium 215, *Energy levels), (*Thorium 227, Alpha decay), Gamma spectra, Alpha particles, Angular correlation, Energy-level transitions, Gamma radiation, Ground states, Mixing ratio, Parity, Spin, Internal conversion, Angular distribution, Thorium 226, Uranium 230.

For abstract, see NSA 28 05, number 11886.

N73-29736/8GA PC$3.00/MF$1.45
Laboratoire de Physique Theorique et des Hautes Energies, Orsay (France).
NAIVE QUARK PAIR CREATION MODEL AND BARYON DECAYS.
A. Leyaouanc, L. Oliver, O. Pene, and J. Raynal. 1973, 13p LPTHE-73/11

Descriptors: *Baryons, *Quarks, *Radioactive decay, Barriers, Centrifugal force.

For abstract, see STAR 1120

N73-29737/6GA PC$3.00/MF$1.45
Laboratoire de Physique Theorique et des Hautes Energies, Orsay (France).
I.S.R. ELASTIC PROTON-PROTON SCATTERING DATA AND GRIBOV'S REGGEON CALCULUS.
C. Pajares, and D. Schiff. May 73, 20p LPTHE-73/13
Subm-Sponsored in Part by Gift.

Descriptors: *Elastic scattering, *Proton-proton reactions, Differential calculus, Proton scattering, Regge poles, Scattering cross sections.

For abstract, see STAR 1120

N73-29738/4GA PC$3.25/MF$1.45
Laboratoire de Physique Theorique et des Hautes Energies, Orsay (France).
NEW GHOST-FREE DUAL MODELS.
J. L. Gervais, and A. Neveu. Jun 73, 24p LPTHE-73/16

Descriptors: *Ghosts, *Mathematical models, *Resonant vibration, Differential equations, Excitation, Regge poles, S matrix theory, Theoretical physics.

For abstract, see STAR 1120

N73-29739/2GA PC$3.75/MF$1.45
Laboratoire de Physique Theorique et des Hautes Energies, Orsay (France).
PREDICTION OF THE DIRECT PRODUCT OF SU(3) AND SU(3) CONFIGURATION MIXING IN THE REALISTIC QUARK MODEL.
A. Leyaouanc, L. Oliver, O. Pene, and J. Raynal. May 73, 34p LPTHE-73/15

Descriptors: *Hadrons, *Harmonic oscillation, *Quarks, Operators (Mathematics), Spin, Wave functions.

For abstract, see STAR 1120

N73-29740/0GA PC$3.00/MF$1.45
Laboratoire de Physique Theorique et des Hautes Energies, Orsay (France).
THE PROTON LEADING EFFECT IN PROTON PROTON COLLISIONS.
J. Gabarro, and C. Pajares. 1973, 14p LPTHE-73/17
Subm-Sponsored in Part by Gift.

Descriptors: *Particle collisions, *Proton-proton reactions, *Regge poles, Nuclear models, Theoretical physics.

For abstract, see STAR 1120

N73-29741/8GA PC$3.00/MF$1.45
Laboratoire de Physique Theorique et Particules Elementaires, Orsay (France).
EXPLORATORY DIP SYSTEMATICS IN ELASTIC SCATTERING.
J. Tranthanhvan. 1973, 14p LPTPE-73/18

Descriptors: *Elastic scattering, *Scattering cross sections, High energy interactions, Particle motion.

For abstract, see STAR 1120

ORNL-TM-3809/GA PC$6.75/MF$1.45
Oak Ridge National Lab., Tenn.
SWANLAKE, A COMPUTER CODE UTILIZING ANISN RADIATION TRANSPORT CALCULATIONS FOR CROSS SECTION SENSITIVITY ANALYSIS.
D. E. Bartine, F. R. Mynatt, and E. M. Oblow. May 73, 93p
Contract W-7405-eng-26

Descriptors: (*Computer codes, *S codes), (*Nuclear reactions, *Cross sections), (*Dose rates, Computer codes), (*Tissues, *Radiation doses), Boltzmann equation, Discrete ordinates, Gamma radiation, Neutrons, One-dimensional calculations.

For abstract, see NSA 28 04, number 09887.

ORNL-TM-4193/GA PC$4.75/MF$1.45
Oak Ridge National Lab., Tenn.
INTEGRAL NEUTRON SCATTERING MEASUREMENTS ON IRON FROM 1 TO 20 MEV.
G. L. Morgan, T. A. Love, and F. G. Perey. Jun 73, 54p
Contract W-7405-eng-26

Descriptors: (*Iron, Neutron reactions), (*Neutron reactions, *Inelastic scattering), (*Neutron beams, Inelastic scattering), Fast neutrons, Mev range 01-10, Mev range 10-100, Neutron spectra.

For abstract, see NSA 28 04, number 09577.

ORNL-TM-4232/GA PC$8.00/MF$1.45
Oak Ridge National Lab., Tenn.
GAMMA-RAY DUE TO NEUTRON INTERACTIONS WITH ALUMINUM FOR INCIDENT NEUTRON ENERGIES BETWEEN 0.85 AND 20 MEV: TABULATED DIFFERENTIAL CROSS SECTIONS.
J. K. Dickens, T. A. Love, and G. L. Morgan. Jun 73, 118p
Contract W-7405-eng-26

Descriptors: (*Aluminium, *Neutron reactions), (*Neutron beams, Aluminium), Differential cross sections, Gamma radiation, Mev range 01-10, Mev range 10-100.

For abstract, see NSA 28 05, number 11793.

ORNL-TM-4252/GA PC$5.25/MF$1.45
Oak Ridge National Lab., Tenn.
GAMMA-RAY PRODUCTION DUE TO NEUTRON INTERACTIONS WITH CALCIUM FOR INCIDENT NEUTRON ENERGIES BETWEEN 0.7 AND 20 MEV: TABULATED DIFFERENTIAL CROSS SECTIONS.
J. K. Dickens, T. A. Love, and G. L. Morgan. Jul 73, 61p
Contract W-7405-eng-26

Descriptors: (*Calcium, *Neutron reactions), (*Neutron beams, *Nuclear reactions), Data, Differential cross sections, Gamma radiation, Kev range 100-1000, Mev range 01-10, Mev range 10-100, Tables.

For abstract, see NSA 28 06, number 14039.

ORNL-TM-4257/GA PC$3.75/MF$1.45
Oak Ridge National Lab., Tenn.
ADLER-III: A PROGRAM TO CALCULATE CROSS SECTIONS FROM ADLER-ADLER RESONANCE PARAMETERS.
R. Q. Wright. Jun 73, 31p ENDF-191
Contract W-7405-eng-26

Descriptors: (*Computer codes, *A codes), (*Uranium 233, Neutron reactions), (*Neutron reactions, *Cross sections), (*Neutron beams, *Fission), Doppler broadening, Epithermal neutrons, Ev range 01-10, Ev range 10-100, Fortran, Ibm computers, Nuclear reactions, Total cross sections, Capture, Gamma radiation, Uranium 234.

For abstract, see NSA 28 06, number 14104.

ORNL-4844/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING DECEMBER 31, 1972.
F. E. Obenshain. Apr 73, 310p
Contract W-7405-eng-26

Descriptors: (*Nuclear physics, *Research programs), (*High energy physics, Research programs), (*Accelerators, Research programs), Ornl.

For abstract, see NSA 28 05, number 11813.

ORO-1067-10/GA PC$7.25/MF$1.45
Duke Univ., Durham, N. C.
ANNUAL PROGRESS REPORT.
H. W. Newson. 31 Dec 72, 102p
Contract AT(40-1)-1067

Descriptors: (*Nuclear physics, *Research programs), Excitation functions, F waves, Fast neutrons, Intermediate structure, Level widths, Mev range 01-10, Neutron beams, Neutron reactions, Nuclear reactions, R matrix, Resonance, Silicon 28, Total cross sections, Energy levels, Iron 53, Lifetime, North carolina.

For abstract, see NSA 28 05, number 11846.

ORO-2504-207/GA PC$3.00/MF$1.45
Maryland Univ., College Park. Dept. Of Physics and Astronomy.
DISTRIBUTION OF TRANSVERSE MOMENTUM.
R. G. Glasser. Jun 73, 3p

Descriptors: (*Pions, *Particle production), Distribution, Inclusive interactions, Linear momentum, Probability, Rotation, Symmetry.

For abstract, see NSA 28 06, number 13726.

ORO-3065-28/GA PC$3.00/MF$1.45
Duke Univ., Durham, N. C.
PROGRESS REPORT, JULY 1, 1972--JUNE 30, 1973.
W. D. Walker. 1973, 7p
Contract AT(40-1)-3065

Descriptors: (*High energy physics, *Research programs), Bubble chambers, Data processing, Pion-pion interactions, Projection spark chambers.

For abstract, see NSA 28 06, number 12949.

ORO-3624-13/GA PC$3.00/MF$1.45
North Carolina State Univ., Raleigh.
NORTH CAROLINA STATE UNIVERSITY NUCLEAR STRUCTURE RESEARCH AT THE TRIANGLE UNIVERSITIES NUCLEAR LABORATORY. PROGRESS REPORT, SEPTEMBER 1, 1972--AUGUST 31, 1973.
L. W. Seagondollar, A. W. Waltner, G. E. Mitchell, D. R. Tilley, and C. R. Gould. 23 May 73, 19p
Contract AT(40-1)-3624

Descriptors: (*Nuclear structure, *Research programs), Accelerators, Energy-level transitions, Isobaric analogs, North carolina, Nuclear reactions, Nuclei, X radiation.

For abstract, see NSA 28 04, number 09578.

ORO-3948-5/GA PC$3.00/MF$1.45
Houston Univ., Tex.
PION INTERACTIONS AT MEDIUM ENERGIES. PROGRESS REPORT.
J. C. Allred, C. Goodman, and B. W. II Mayes. 1 Jun 73, 14p
Contract AT(40-1)-3948

Descriptors: (*Carbon, *Pion reactions), (*Aluminium, Pion reactions), (*Copper, Pion reactions), (*Lead, Pion reactions), Cherenkov counters, Cross sections, Lampf linac, Mev range, Multiple scattering, Nuclear reaction kinetics, Nuclear structure, Nuclei, Proportional counters, Proton reactions, Quasi-elastic scattering, Scintillation counters.

For abstract, see NSA 28 04, number 09704.

ORO-3992-123/GA PC$3.00/MF$1.45
Texas Univ., Austin. Center for Particle Theory.
STATIONARY STATES OF A SPIN-1 PARTICLE IN A HOMOGENEOUS MAGNETIC FIELD.
P. M. Mathews. May 73, 20p CPT-73

Descriptors: (*Bosons, *Magnetic fields), Charged particles, Coulomb field, Eigenfunctions, Elementary particles, Energy spectra, Magnetic moments, Spin, Vector mesons.

For abstract, see NSA 28 04, number 09352.

ORO-3992-126/GA PC$3.00/MF$1.45
Texas Univ., Austin. Center for Particle Theory.
FORWARD PEAKED NU /SUB E/-E SCATTERING AND THE SOLAR NEUTRINO PROBLEM.
R. B. Clark, and R. D. Pedigo. Apr 73, 10p CPT-178
Contract AT(40-1)-3992

Descriptors: (*Neutrinos, *Particle radii), (*Solar radiation, *Flux density), Electromagnetic interactions, Form factors, Magnetic moments, Neutrino-electron interactions, Sun, Weak interactions.

For abstract, see NSA 28 04, number 09353.

ORO-4043-10/GA PC$14.50/MF$1.45
Virginia Univ., Charlottesville.
EXPERIMENTS ON THE NUCLEAR INTERACTIONS OF PIONS. PROGRESS REPORT, SEPTEMBER 1, 1972--AUGUST 31, 1973.
J. S. McCarthy, R. C. Minehart, S. E. Sobottka, and K. O. H. Ziock. 1973, 248p
Contract AT(40-1)-4043

Descriptors: (*Pion reactions, *Absorption), (*Helium 4, Pion reactions), (*Helium 3, Pion reactions), (*Lithium 6, Pion reactions), Beryllium 8, Calcium 40, Carbon 12, Cross sections, Final-state interactions, Nitrogen 14, Oxygen 16, Scattering.

For abstract, see NSA 28 04, number 09524.

ORO-4317-22/GA PC$3.00/MF$1.45
Maryland Univ., College Park. Dept. Of Physics and Astronomy.
COULOMB CORRECTIONS TO THE INDUCED PSEUDOSCALAR TERM IN NUCLEAR MUON CAPTURE. TECHNICAL REPORT NO. 73-130.
L. P. Fulcher, and N. C. Mukhopadhyay. Jun 73, 16p

Descriptors: (*Oxygen 16, *Muon reactions), (*Calcium 40, Muon reactions), (*Muon beams, *Capture), Angular momentum, Coulomb correction, Coulomb field, Coupling, Coupling constants, Diagrams, Distribution, Energy, Gauge invariance, Green function, Impulse approximation, Legendre polynomials, Leptons, Linear momentum, Mass, Matrix elements, Muons, Neutrinos, Nucleons, Pions, Propagator, Pseudoscalars, Singularity, Weak interactions.

For abstract, see NSA 28 06, number 14004.

RCN-184/GA PC$5.00/MF$1.45
Reactor Centrum Nederland, the Hague.
INVESTIGATION OF THERMAL-NEUTRON CAPTURE IN EXP 39 K.
A. M. F. Op den Kamp. May 73, 58p
U.S. Sales Only.

Descriptors: (*Potassium 39, Neutron reactions), (*Neutron reactions, *Capture), (*Potassium 40, *Energy levels), Angular correlation, Coincidence methods, Energy-level transitions, Excitation, Gamma spectra, Interference, Mixing ratio, Multipolarity, Parity, Polarization, Q-value, Spin, Thermal neutrons.

For abstract, see NSA 28 05, number 11847.

RL-73-29/GA PC$3.25/MF$1.45
Rutherford High Energy Lab., Chilton (England).
STATISTICAL BOOTSTRAP OF NON-SPHERICAL FIREBALLS.
I. Montvay. May 73, 21p
U.S. Sales Only.

Descriptors: (*Hadrons, *Bootstrap model), Decay, Fireball model, Integral equations, Interactions, Shape, Statistical models.

For abstract, see NSA 28 05, number 11713.

RL-73-3/GA PC$4.25/MF$1.45
Rutherford High Energy Lab., Chilton (England).
SHADOW APPROACH TO DIFFRACTION SCATTERING.
E. H. de Groot, and H. I. Miettinen. Apr 73, 42p
CONF-730334-2
U.S. Sales Only.

Descriptors: (*Proton-proton interactions, *Elastic scattering), (*Diffraction models, Elastic scattering), Gev range, Multiple production, Particle models, S matrix, Scattering amplitudes, Unitarity.

For abstract, see NSA 28 05, number 11758.

RL-73-4/GA PC$3.75/MF$1.45
Rutherford High Energy Lab., Chilton (England).
THEORETICAL MODELS OF PP SCATTERING.
R. J. N. Phillips. Apr 73, 32p
U.S. Sales Only.

Descriptors: (*Proton-proton interactions, *Elastic scattering), (*Scale invariance, Proton-proton interactions), (*Pomeranchuk particles, Proton-proton interactions), (*Dual resonance model, Proton-proton interactions), Gev range, Interactions, Particle models, Proton beams, Protons, Regge poles, Scaling laws.

For abstract, see NSA 28 05, number 11759.

RLO-1388-654/GA PC$4.00/MF$1.45
Washington Univ., Seattle. Dept. Of Physics.
THEORETICAL NUCLEAR PHYSICS PROGRAM B. PROGRESS REPORT, OCTOBER 1, 1972--SEPTEMBER 30, 1973.
1973, 37p
Contract AT(45-1)-1388

Descriptors: (*Nuclear physics, *Research programs), (*Many-body problem, Research programs), (*High energy physics, Research programs), (*Atoms, Research programs), Astrophysics, Elementary particles, Field theories, Statistical mechanics, Washington.

For abstract, see NSA 28 06, number 14128.

RLO-2225-T-27-2/GA PC$3.00/MF$1.45
Washington Univ., Seattle. Dept. Of Physics.
HIGH ENERGY PHYSICS STUDIES OF PARTICLE INTERACTIONS IN HEAVY ELEMENTS. FINAL REPORT FOR THE PERIOD MAY 15, 1972--MAY 14, 1973.
J. J. Lord. 29 May 73, 10p
Contract AT(45-1)-2225

Descriptors: (*Proton beams, *Nuclear reactions), (*Proton reactions, *Knock-out reactions), (*Tungsten, Proton reactions), Angular distribution, Gev range 100-1000, Multiplicity, Nuclear cascades, Nuclear emulsions, Nuclei.

For abstract, see NSA 28 04, number 09637.

RLO-2227-T-7-18/GA PC$3.75/MF$1.45
Oregon State Univ., Corvallis. Dept. Of Chemistry.
FUNDAMENTALS OF NUCLEAR SCIENCE. I. NUCLEAR STRUCTURE AND NUCLEAR REACTIONS.
W. D. Loveland. 1972, 31p CONF-720855-1

Descriptors: (*Nuclear theory, *Reviews), (*Nuclear reactions, Reviews), (*Nuclear structure, Reviews).

For abstract, see NSA 28 05, number 11923.

RLO-2230-T-4-85/GA PC$3.00/MF$1.45
Oregon Univ., Eugene. Inst. Of Theoretical Science.
TRANSVERSE MOMENTUM DISTRIBUTION IN INCLUSIVE REACTIONS AND RELATIONSHIP BETWEEN THE DIFFRACTIVE EXCITATION MODEL AND THE THERMODYNAMIC MODEL.
E. M. Gordon. 1972, 10p
Contract AT(45-1)-2230

Descriptors: (*Inclusive interactions, *Diffraction models), (*Proton-proton interactions, Inclusive interactions), (*Proton beams, *Protons), Decay, Distribution, Excitation, Linear momentum, Pions, Spectra, Thermodynamic model.

For abstract, see NSA 28 04, number 09387.

RLO-2230-T-4-86/GA PC$3.50/MF$1.45
Oregon Univ., Eugene.
SLOPE OF THE FORWARD PEAK: AN S-CHANNEL ANALYSIS.
R. C. Hwa. 9 Jan 73, 28p
Contract AT(45-1)-2230

Descriptors: (*Optical theorem, *Diffraction models), Elementary particles, Multiperipheral model, Multiple production, Pomeranchuk poles, Regge trajectories, Unitarity.

For abstract, see NSA 28 04, number 09388.

RLO-2230-T-4-87/GA PC$3.00/MF$1.45
Oregon Univ., Eugene. Inst. Of Theoretical Science.
PION CHARGE RADIUS FROM CURRENT ALGEBRA SUM RULE AND SHORT RANGE CORRELATION MODEL.
G. J. Il Aubrecht, and R. C. Hwa. 19 Mar 73, 8p
Contract AT(45-1)-2230

Descriptors: (*Pions, *Electromagnetic form factors), Correlations, Current algebra, Electric charges, Interaction range, Particle radii, Photoproduction, Sum rules.

For abstract, see NSA 28 04, number 09354.

RLO-2230-T-4-88/GA PC$3.00/MF$1.45
Oregon Univ., Eugene. Inst. Of Theoretical Science.
RELATIONSHIP BETWEEN DIFFRACTIVE PEAKS OF ELASTIC AND EXCITATION PROCESSES.
E. M. Gordon, and R. C. Hwa. 16 Apr 73, 15p
Contract AT(45-1)-2230

Descriptors: (*Diffraction models, *Elastic scattering), Anisotropy, Decay, Differential cross sections, Distribution, Elementary particles, Excitation, Multiple production, Resonance particles.

For abstract, see NSA 28 04, number 09389.

RLO-2230-T-4-89/GA PC$4.50/MF$1.45
Oregon Univ., Eugene. Inst. Of Theoretical Science.
OFF-MASS SHELL PARITY-VIOLATING PION--NUCLEON INTERACTION.
E. M. Henley, T. E. Keliher, W. J. Pardee, and D. U. L. Yu. 1973, 48p

Descriptors: (*Pion-nucleon interactions, P invariance), (*Pion beams, *Nucleons), (*P invariance, *Weak interactions), Coupling constants, Sigma model.

For abstract, see NSA 28 05, number 11740.

RLO-2230-T-4-90/GA PC$5.00/MF$1.45
Oregon Univ., Eugene. Dept. Of Physics.
DISPERSION RELATIONS IN THE TRANSVERSE MOMENTUM.
W. Y. Yu. Mar 73, 56p

Descriptors: (*Pion-nucleon interactions, *Dispersion relations), (*Nucleons, *Pion beams), Linear momentum.

For abstract, see NSA 28 04, number 09410.

SLAC-155/GA PC$5.45/MF$1.45
Stanford Linear Accelerator Center, Calif.
CHARGE ASYMMETRY IN K EXP 0 /SUB L/ IMPLIES PI MU NU .
R. L. Piccioni. Sep 72, 84p
Contract AT(04-3)-515

Descriptors: (*Kaons neutral long-lived, *Decay), Asymmetry, Cp invariance, Electric charges, Muons, Neutrinos, Pions.

For abstract, see NSA 28 05, number 11642.

SUNI-23/GA PC$6.75/MF$1.45
Southern Universities Nuclear Inst., Faure (South Africa).
ANNUAL RESEARCH REPORT, 1972.
W. R. McMurray. 1972, 93p
U.S. Sales Only.

Descriptors: (*Nuclear structure, *Research programs), (*Nuclear reactions, Research programs), (*Activation analysis, Research programs), (*Van de graaff accelerators, *Operation), South africa.

For abstract, see NSA 28 06, number 14061.

UCID-16258/GA PC$3.25/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
STATUS REPORT TO USNDC.
J. D. Anderson, and J. C. Browne. 25 Apr 73, 22p
Contract W-7405-Eng-48

Descriptors: (*Nuclear physics, *Lawrence livermore laboratory), (*Information, Lawrence livermore laboratory), Accelerators, Neutron beams, Neutron reactions, Neutron sources, Photonuclear reactions, Tracer techniques.

For abstract, see NSA 28 04, number 09609.

UCID-16277/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
EXP 15 N(P, GAMMA) EXP 16 O REACTION FROM E/SUB P/ = 17.5 TO 27.37 MEV.
W. J. O'Connell, D. W. Heikkinen, and F. S. Dietrich. Jun 73, 11p
Contract W-7405-eng-48

Descriptors: (*Nitrogen 15, Proton reactions), (*Proton reactions, *Capture), (*Oxygen 16, *Energy levels), (*Proton beams, Capture), Excitation, Excited states, Gamma spectra, Mev range 10-100, Nuclear reaction yield.

For abstract, see NSA 28 06, number 14005.

UCR-34-P-107-AX-1/GA PC$3.00/MF$1.45
California Univ., Riverside.
ANNUAL REPORT FOR THE PERIOD SEPTEMBER 1, 1970--FEBRUARY 1, 1972.
P. E. Kaus, and B. R. Desai. 6p
Contract AT(04-3)-34

Descriptors: (*Scattering, *Regge poles), Research programs, Veneziano model.

For abstract, see NSA 28 04, number 09438.

UCRL-74743/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
SYSTEMATIC PROPERTIES OF THE GIANT RESONANCE: CURRENT STATUS.
R. L. Bramblett, S. C. Fultz, and B. L. Berman. 4 May 73, 11p CONF-730301-7

Descriptors: (*Giant resonance, *Reviews), (*Nuclear structure, Giant resonance), Cross sections, Decay, Energy, Level widths, Mev range 01-10, Mev range 10-100, Nuclei, Photonuclear reactions, Sum rules.

For abstract, see NSA 28 05, number 11866.

UCRL-74746/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
RECENT HIGH-RESOLUTION (GAMMA ,N) MEASUREMENTS AT LIVERMORE.
B. L. Berman, R. A. Alvarez, D. D. Faul, F. H. Jr. Lewis, and P. Meyer. 4 May 73, 3p CONF-730301-6

Descriptors: (*Beryllium 9, *Photonuclear reactions), (*Carbon 12, Photonuclear reactions), (*Nitrogen 14, Photonuclear reactions), Arsenic 75, Cross sections, Energy levels, Giant resonance, Knock-out reactions, Photon beams, Praseodymium 141.

For abstract, see NSA 28 06, number 14006.

UJF-2905-F/GA PC$3.50/MF$1.45
Ceskoslovenska Akademie Ved, Rez. Ustav Jaderne Fyziky.
CORRELATION EFFECTS IN THE THEORY OF ELECTRON SCATTERING BY NUCLEI.
N. M. Kabachnik. Mar 73, 29p
U.S. Sales Only.

Descriptors: (*Electron reactions, *Elastic scattering), Correlations, Cross sections, Excitation, Giant resonance, Inelastic scattering, Nuclei, Nucleons, Quasi-elastic scattering, Shell models, Spallation, Spectra.

For abstract, see NSA 28 05, number 11924.

USNDC-3/GA PC$3.00/MF$1.45
Argonne National Lab., Ill.
REPORTS TO THE U.S. NUCLEAR DATA COMMITTEE MEETING AT NATIONAL BUREAU OF STANDARDS, 24--26 OCTOBER 1972.
H. E. Jackson. 1973, 230p BANDC(US)-176-U, INDC(USA)-50-U

Descriptors: (*Nuclear physics, *Meetings), Alpha beams, Alpha decay, Alpha reactions, Charged particles, Charged-particle reactions, Cross sections, Data, Gamma radiation, Information, Ion beams, Leading abstract, Neutron beams, Neutron reactions, Nuclear reaction yield, Nuclear reactions, Nuclear structure, Proton beams, Proton reactions, Research programs, Us aec.

For abstract, see NSA 28 04, number 09670.

20I. Plasma Physics

AD-767 683/6GA PC$9.50/MF$1.45
Naval Postgraduate School Monterey Calif
THE PRESSURE DEPENDENCE OF SPONTANEOUS MAGNETIC FIELDS IN LASER PRODUCED PLASMAS.
Doctoral thesis,
Ronald Stanley Bird. Jun 73, 146p

Descriptors: (*Plasma medium, Lasers), (*Magnetic fields, Production), (*Magnetic fields, Production), Electron density, Hydrogen, Helium, Neon, Argon, Probes(Electromagnetic), Theorems, Theses, Aluminum.
Identifiers: *Laser produced plasmas, Electron energy, Laser beams, Q switched lasers, *Plasma diagnostics.

A plasma has been produced by irradiation of an aluminum slab with a 6.6 joule, 22 nanosecond (10 to the 10th power watt/sq cm) pulse of 1.06 micrometer radiation. Magnetic fields were observed to arise spontaneously when the laser-produced plasma was formed. The space and time behavior of the spontaneous magnetic fields and their relationship to the plasma density profile for expansion into various background pressures of H2, He, N2 and Ar was investigated using magnetic and electrostatic (double) probes. The magnitude and direction of the magnetic fields was found to depend on the background gas pressure. The generation of spontaneous magnetic fields at the front of the expanding laser plasma was observed long after laser irradiation ceased. These fields were axially symmetric and in a direction opposite to the initial field direction. Reverse fields were observed only above a critical background gas pressure. Magnetic fields were also observed to arise when a laser plasma impinged on a glass plate. The observed increase of the magnitude of the initial spontaneous magnetic fields is interpreted as arising from the momentum interaction between the expanding laser plasma and the pre-ionized ambient background plasma. The reverse field is attributed to the development of an axial electron temperature gradient at the plasma front due to snowplowing of the ambient plasma. (Author)

AD-767 818/8GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
THEORY OF ELECTRON RESONANCE AT HARMONICS OF CYCLOTRON FREQUENCY. IV,
Omkar Nath, and R. N. Singh. 20 Mar 71, 7p
AFCRL-TR-73-0450
Grant EOOAR-70-0070
Revision of report dated 27 Oct 70.
Availability: Pub. in International Jnl. of Electronics, v31 n6 p637-642 1971.

Descriptors: (*Plasma medium, Cyclotron resonance phenomena), Electrons, Electromagnetic waves, Differential equations, Doppler effect, India.
Identifiers: Cyclotron resonance.

The higher-order cyclotron harmonic resonance of electrons with the electromagnetic wave is considered. It is shown that the energy gain is oscillatory. The resulting differential equation is solved. The expressions for time period and oscillatory energy gain are obtained. (Author)

AD-767 822/0GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
REFRACTIVE INDEX OF THE DRIFTING PLASMA,
P. K. Shukla, R. P. Singh, and R. N. Singh. 12 Aug 70, 5p AFCRL-TR-73-0456
Grant EOOAR-70-0070
Revision of report dated 27 May 70.
Availability: Pub. in IEEE Transactions on Antennas and Propagation, vAF-19 n2 p295-296 Mar 71.

Descriptors: (*plasma medium, Refractive index), Partial differential equations, India, Ionospheric propagation.
Identifiers: Maxwells equations.

The refractive index of drifting plasma is derived from the solution of a modified wave equation. The new refractive index is reduced in terms of stationary plasma parameters and its usefulness is outlined. (Author)

AD-767 824/6GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
HEATING OF ELECTRONS BY OSCILLATING ELECTRIC FIELD IN THE PRESENCE OF STEADY MAGNETIC FIELD,
P. K. Shukla, and R. N. Singh. 1971, 6p AFCRL-TR-73-0459
Grant EOOAR-70-0070
Availability: Pub. in Indian Jnl. of Pure and Applied Physics, v9 n8 p573-576 1971.

Descriptors: (*Electrons, Heating), Plasma medium, Kinetic energy, Partial differential equations, Transport properties, India, Electric fields, Oscillation.
Identifiers: *Electron energy, Boltzmann equation.

The Boltzmann transport equation has been solved for an electron velocity distribution in a weakly ionized plasma under the following conditions: (1) when an oscillating electric field with a constant amplitude is applied perpendicular to the static uniform magnetic field; (2) when there is a change in electron energy due to elastic collisions with the neutral particles; and (3) existence of thermal equilibrium of the plasma, i.e., the average electron energy being equal to the mean thermal energy of a neutral particle. The perturbed velocity distribution function is obtained as a function of the electric field imposed, its oscillating frequency, time and the strength of the magnetic field. Using kinetic and statistical considerations, the energy balance equation for electrons is obtained. The electron temperature in the plasma is estimated by solving the energy balance equation. The present study suggests that the electron temperature is strongly dependent on the strength of the oscillating electric field, steady magnetic field and collision processes of electrons. (Author)

AD-767 841/0GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
MODULATION OF MAGNETOPLASMA DUE TO MAGNETIC PERTURBATIONS,
R. Y. Prasad, and R. N. Singh. 12 May 70, 6p
AFCRL-TR-73-0464
Grant E00AR-70-0070
Availability: Pub. in International Jnl. Electronics, v29 n4 p377-381 1970.

Descriptors: (*Magnetohydrodynamics, Perturbation theory), (*Plasma medium, Modulation), Magnetic fields, Charged particles, Transport properties, India.
Identifiers: Boltzmann equation.

The propagation of low frequency and low amplitude magnetic perturbation in magnetoplasma has been considered. The collisionless Boltzmann transport equation has been solved for the first- and second-order perturbations. The second-order perturbation is found to grow with time and results in density modulation of the ambient magnetoplasma. The geophysical implications of density modulation have been discussed. (Author)

AD-767 851/9GA Reprint
Stanford Univ Calif Inst for Plasma Research
SYNCHROTRON SOURCES. I. EXTENSION OF THEORY FOR SMALL PITCH ANGLES,
Richard I. Epstein. 27 Nov 72, 18p
Contract N00014-67-A-0112-0062, Grant NSF-GP-23840
Sponsored in part by Grant NGL-05-020-272. Supersedes AD-756 664.
Availability: Pub. in The Astrophysical Jnl., v183 n2 p593-610, 15 Jul 73.

Descriptors: (*Plasma medium, Particle trajectories), Magnetic fields, Emissivity, Polarization, Astrophysics, Numerical analysis.
Identifiers: *Synchrotron radiation.

The author examines some of the features of synchrotron radiation which occur when relativistic particles move with small pitch angles in a magnetic field. The emission from individual particles is computed; the general properties of the emission from distribution of particles with small pitch angles are discussed; and, finally, the emissivities and degrees of polarization for several specific source models are presented. The application of these results to astrophysical phenomena are considered in an accompanying paper. (Author)

AD-767 923/6GA PC$3.75/MF$1.45
Naval Research Lab Washington D C
K-SHELL LINE RADIATION FROM LASER-PRODUCED ALUMINUM PLASMAS.
Interim rept.,
K. Whitney, J. Davis, and E. Oran. Jun 73, 76p
Rept no. NRL-MR-2644

Descriptors: (*Plasma medium, *X-ray spectrum), (*Aluminum, Ionization potentials), Mathematical models, Gas ionization, Reaction kinetics, Electron density, Graphics.
Identifiers: Emission spectra, Energy transfer, Neodymium lasers, Pulsed lasers, Electron energy, *Aluminum plasma, *Laser produced plasmas, Plasma diagnostics.

Two rate equation models are developed to describe the emission of K-line radiation from laser-produced aluminum plasmas. In the first model, the temperature of the electrons is a freely variable quantity; whereas, in the second model, it is computed from a kinetic energy equation in which phenomenological terms representing thermal conduction and laser energy absorption are introduced. The latter model predicts X-ray emission from a hot-spot of plasma in close agreement with observations from an experiment initiated by focusing 1.9 J of neodymium radiation in a 1/4 nanosecond pulse onto an aluminum target. Computer solutions to the rate equation model are obtained for a number of different prescribed time variations of the electron temperature. These solutions are compared to a similar set of solutions to a coronal model. It is found that these two sets of solutions differ significantly whenever the electron temperature varies rapidly over sub-nanosecond periods and the aluminum plasma has

not been overheated and driven to the state of total ionization. (Author)

AD-767 959/0GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
EXPERIMENTAL STUDY OF THE EFFECT OF CROSSED ELECTRICAL AND MAGNETIC FIELDS ON THE HYDRODYNAMICS AND HEAT TRANSFER ON A PERMEABLE PLATE DURING THE INJECTION OF AN ELECTROCONDUCTIVE FLUID,
V. M. Eroshenko, V. P. Motulevich, V. A. Sopikov, and A. D. Starostin. 28 Sep 73, 10p Rept no. FTD-HT-23-40-74
Edited trans. of Akademiya Navuk BSSR, Minsk. Institut Teplo- i Massoobmena. Trudy, v1 p131-135 1972, by Victor Mesenzeff.

Descriptors: (*Magnetohydrodynamics, Heat transfer), Electromagnetic fields, USSR.
Identifiers: Translations.

The paper presents results of a study concerning the effect of an electromagnetic field on the hydrodynamics and heat transfer under conditions where a conducting fluid is injected through a perforated plate.

AD-768 002/8GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
HEATING OF THE ELECTRON COMPONENT OF MAGNETOPLASMA BY MAGNETIC PERTURBATIONS.
P. K. Shukla, R. P. Singh, and R. N. Singh. 13 Oct 70, 10p AFCRL-TR-73-0471
Grant EOOAR-70-0070
Availability: Pub. in Canadian Jnl. of Physics, v49 n4 p395-401, 15 Feb 71.

Descriptors: (*Plasma medium, Heating), (*Magnetic fields, Plasma medium), Electron density, Distribution functions, Partial differential equations, Perturbation theory, Magnetosphere, Ionosphere, India.
Identifiers: Electron energy, Boltzmann equation.

The Boltzmann transport equation has been solved for the change in the assumed Maxwellian distribution of electron velocity in response to certain magnetic perturbations. The heating of the electron component of the fully ionized and weakly ionized magnetoplasma has been studied. The effect of propagating and localized magnetic perturbations has been considered. Electron heating has been estimated for certain adopted magnetic perturbation and magnetoplasma parameters. The feasibility of devising a laboratory for electron heating has been argued. (Author)

AD-768 004/4GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
ON THE ABSORPTION OF MICROWAVE THROUGH LABORATORY PLASMA,
A. K. Gwal, K. P. Singh, and K. D. Misra. 23 Jun 72, 6p AFCRL-TR-73-0473
Grant EOOAR-70-0070
Availability: Pub. in the Jnl. of the Institution of Telecommunication Engineers, v19 n2 p9496 1973.

Descriptors: (*Plasma medium, *Microwaves), Electron density, Absorption, India.
Identifiers: *Plasma diagnostics.

Propagation of microwaves through the laboratory plasma has been considered. Effects of inter-particle collision have been included in deriving an expression for the reflected microwave pulse from the other end of reflection probe. Effects of electron collisions on the distortion of received signals have been discussed. (Author)

AD-768 005/1GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
PROPAGATION OF A RECTANGULAR PULSE AS A PLASMA DIAGNOSTIC,
K. P. Singh, P. K. Shukla, and R. N. Singh. Aug 71, 5p AFCRL-TR-73-0474
Grant EOOAR-70-0070
Availability: Pub. in the Indian Jnl. of Pure and Applied Physics, v9 p570-572 Aug 72.

Descriptors: (*Plasma medium, Electromagnetic pulses), Distortion, Refractive index, Electron density.
Identifiers: Plasma diagnostics.

The propagation of a rectangular envelope carrier pulse through an inhomogeneous medium is proposed as a plasma diagnostic. The effect of electron collisions and other plasma parameters in producing the distortion of signal is studied. The distortion thus produced in the rectangular pulse is compared with that for the Gaussian carrier pulse. It is observed that the rectangular pulse is more distorted and hence it helps in the study of plasma parameters. (Author)

AD-768 006/9GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
BREMSSTRAHLUNG RADIATION FROM THE WEAKLY IONIZED LABORATORY PLASMA.
P. K. Shukla, A. K. Gwal, K. Vohra, and K. D. Misra. 27 Jul 71, 6p AFCRL-TR-73-0475
Grant EOOAR-70-0070
Revision of report dated 27 Apr 71.
Availability: Pub. in the Indian Jnl. of Pure and Applied Physics, v10 p508-511 Jul 72.

Descriptors: (*Plasma medium, Bremsstrahlung), Electromagnetic fields, Transport properties, Partial differential equations.
Identifiers: Boltzmann equation.

The Boltzmann transport equation for weakly ionized plasma has been linearized and solved for the first and second order velocity distribution functions. Considering the binary collisions as a source of electromagnetic wave emission, expressions for the absorption coefficient, the emission coefficient and the total radiated power have been derived. The effect of first and second order perturbations in the velocity distribution function on the total electromagnetic power in the case of a laboratory plasma has been studied. (Author)

AD-768 062/2GA PC$2.75/MF$1.45
Cornell Univ Ithaca N Y
FUNDAMENTAL STUDIES ON TURBULENT HEATING OF A FUSION PLASMA.
Annual summary rept. 1 Jul 72-30 Jun 73,
Charles B. Wharton. 30 Jun 73, 22p
Contract N00014-67-A-0077-0022

Descriptors: (*Plasma medium, Turbulence), Resistance(Electrical), Ions, Distribution functions, Heating, Scientific research.
Identifiers: Nuclear fusion, Plasma heating, Ion acoustic waves, Plasma diagnostics.

During the past year the investigation has continued of the scaling laws of turbulent heating and on optimizing the experiment as a pulsed plasma heating device. Three main conclusions have been reached from these investigations: The plasma resistivity is anomalously large during turbulent heating, approaching the Buneman value normally associated with the electron 2-stream instability, yet the observed turbulent spectrum is more appropriate for ion acoustic waves; the ion energy distribution is non-Maxwellian, but nearly isotropic. The ions have a small drift in one direction, and a high energy tail in the opposite (electron drift) direction; the turbulent heating often limits itself before the peak of the current is reached.

AD-768 341/0GA PC$3.00/MF$1.45
Air Force Academy Colo
NONLINEAR ABSORPTION AND HEATING OF DENSE PLASMAS.
Technical rept. Jun-Aug 73,
Norman F. Roderick. Sep 73, 49p Rept no. DFAN-TR-73-7

Descriptors: (*Plasma medium, Heating), Gas lasers, Magnetic pinch, Bremsstrahlung, Electron density, Deuterium, Curve fitting, Graphics.
Identifiers: Plasma heating, Laser beams, Carbon dioxide lasers, Parametric instabilities.

Absorption of laser radiation by dense plasmas is studied using the model of Dubois, Goldman, and McKinnis for saturation of the parametric decay instability. The basic model contains both linear and nonlinear absorption mechanisms. The nonlinear mechanism includes spectrum broadening, Landau damping, and mode coupling. Modifications have been made to investigate various density profiles and to include the increase in threshold intensity due to the presence of the nonuniform plasma. Physical parameters investigated are those characterizing an exploding aluminum wire plasma and the pinch region of a dense plasma focus both illuminated by a high intensity CO2 laser. Results indicate the previously noted increases in absorption due to the inclusion of the nonlinear saturation mechanism. The previously obtained increases in absorption with increasing density scale height and decreasing temperatures are also recovered. The former indicates end on illumination of the pinch region as the most favorable for heating. The general density results also show the absorption to be a strong function of the shape of the density profile. (Modified author abstract)

CALT-767-P-2-X-2/GA PC$3.75/MF$1.45
California Inst. Of Tech., Pasadena.
PROGRESS REPORT ON PLASMA WAVES.
R. W. Gould. Mar 73, 34p
Contract AT(04-3)-767

Descriptors: (*Plasma waves, *Wave propagation), Absorption, Diffusion, Hybrid resonance, Plasma instability.

For abstract, see NSA 28 05, number 12004.

CEA-R-4410/GA PC$6.25/MF$1.45
Commissariat a l'Energie Atomique, Limeil-Brevannes (France). Centre d'Etudes.
THEORETICAL STUDY OF LASER CREATED PLASMAS CONFINED BY AN EXTERNAL MAGNETIC FIELD.
J. Martineau. Jun 73, 84p
In French. U.S. Sales Only.

Descriptors: (*Laser-produced plasma, *Fuel pellets), Bremsstrahlung, Carbon dioxide, Compton effect, Deuterium, Efficiency, Electric conductivity, Ionization, Magnetic fields, Neodymium, Skin effect.

For abstract, see NSA 28 06, number 14188.

CEA-R-4430/GA PC$6.25/MF$1.45
Commissariat a l'Energie Atomique, Limeil-Brevannes (France). Centre d'Etudes.
SCATTERING OF LASER LIGHT BY THE PLASMA "FOCUS" OF A COAXIAL GUN.
J. P. Garconnet. Jun 73, 81p
In French. U.S. Sales Only.

Descriptors: (*Plasma focus, *Laser radiation), (*Plasma diagnostics, Laser radiation), Emission, Ion temperature, Neutrons, Ruby, Scattering.

For abstract, see NSA 28 06, number 14172.

COM-73-11522/2GA Reprint
National Oceanic and Atmospheric Administration, Boulder, Colo. Aeronomy Lab.
PARAMETRIC EXCITATION OF CIRCULARLY POLARIZED AND ION WAVES IN A MAGNETIZED PLASMA,
K. F. Lee. 18 Dec 72, 08D% NOAA-73071722
Pub. in Physics Letters, v43A n1 p77-78, 12 Feb 73.

Descriptors: (*Plasmas(Physics), Electromagnetic radiation), Magnetic fields, Pinch effect, Circular polarization, Ion beams.
Identifiers: Parametric instabilities.

Threshold intensities and growth rates are calculated for the parametric decay instability in which a circularly polarized pump wave excites a low frequency electrostatic ion wave and an electromagnetic circularly polarized wave in a magnetized plasma. (Author)

CONF-720705-8/GA PC$3.00/MF$1.45
Tennessee Univ., Knoxville. Oak Ridge National Lab., Tenn.
ELECTRON HEATING BY MICROWAVES.
O. Eldridge. 1972, 10p

Descriptors: (*Plasma heating, *High-frequency heating), Diffusion, Electrons, Microwave radiation, Relativistic range, Resonance.

For abstract, see NSA 28 04, number 09737.

CONF-730705-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
PHYSICS OF TARGET PLASMAS IN MINIMUM-B GEOMETRIES.
W. B. Ard, R. J. Colchin, E. C. Crume, J. L. Dunlap, and G. R. Haste. 1973, 7p

Descriptors: (*Plasma heating, *Microwave radiation), (*Imp device, *High-frequency heating), Electron density, Resonance.

For abstract, see NSA 28 05, number 11946.

CONF-730705-3/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
ORMAK AND NEUTRAL INJECTION.
C. F. Barnett, L. A. Berry, C. E. Bush, J. D. Callen, and J. F. Clarke. 1973, 4p

Descriptors: (*Ormak devices, *Beam injection), (*Plasma heating, *Beam injection heating), Atomic beams, Neutral particles.

For abstract, see NSA 28 06, number 14163.

CONF-730705-5/GA PC$3.00/MF$1.45
Princeton Univ., N. J. Plasma Physics Lab.
PLASMA CONFINEMENT PROPERTIES IN FM1-SPHERATOR.
K. Chen, D. Meade, M. Okabayashi, J. Schmidt, and S. Yoshikawa. 1972, 4p

Descriptors: (*Fm devices, *Confinement), (*Hot plasma, Confinement), Electron temperature.

For abstract, see NSA 28 05, number 11947.

COO-2059-19/GA PC$4.00/MF$1.45
Iowa Univ., Iowa City. Dept. Of Physics and Astronomy.
STATISTICAL MECHANICS OF NEGATIVE TEMPERATURE STATES.
D. Montgomery, and G. Joyce. Mar 73, 37p
Contract AT(11-1)-2059

Descriptors: (*Plasma, *Statistical mechanics), Bbgky equation, Boltzmann-vlasov equation, Differential equations, Distribution, Guiding-center approximation, Hamiltonian function, Motion, Particles, Probability, Thermodynamics, Vortices.

For abstract, see NSA 28 04, number 09790.

COO-2059-20/GA PC$3.25/MF$1.45
Iowa Univ., Iowa City. Dept. Of Physics and Astronomy.
ELECTRIC FIELD CORRELATIONS IN THE GUIDING-CENTER PLASMA.
G. Joyce, D. Montgomery, and M. Emery. Apr 73, 21p
Contract AT(11-1)-2059

Descriptors: (*Plasma, *Electric fields), Correlations, Damping, Guiding-center approximation, Two-dimensional calculations.

For abstract, see NSA 28 05, number 11971.

COO-2059-22/GA PC$3.00/MF$1.45
Iowa Univ., Iowa City. Dept. Of Physics and Astronomy.
PLASMA SIMULATION AS EIGENVALUE PROBLEM.
G. Knorr, and M. Shoucri. May 73, 18p
Contract AT(11-1)-2059

Descriptors: (*Plasma simulation, *Boltzmann-vlasov equation), Damping, Eigenvalues, Matrices.

For abstract, see NSA 28 05, number 11972.

COO-2081-11/GA PC$3.00/MF$1.45
Colorado Univ., Boulder. California Univ., Livermore. Lawrence Livermore Lab.
ELECTRON SCATTERING BY ENHANCED FLUCTUATION IN QUIESCENT 2XII DECAY.
R. E. Aamodt, and D. E. Baldwin. 22 Jan 73, 5p
UCID-16202
Contract AT(11-1)-2081

Descriptors: (*2x devices, *Collisions), Boltzmann statistics, Electrons, Plasma, Plasma instability, Scattering.

For abstract, see NSA 28 04, number 09791.

COO-2168-5/GA PC$3.00/MF$1.45
Massachusetts Inst. Of Tech., Cambridge (Usa). Lab. For Plasma Physics.
ANNUAL PROGRESS REPORT, SEPTEMBER 1, 1972--MAY 31, 1973.
J. E. McCune, and D. J. Sigmar. 1973, 8p
Contract AT(11-1)-2168

Descriptors: (*Plasma instability, *Research programs), (*Collisionless plasma, Research programs), Cylindrical configuration, Drift instability, Transport theory.

For abstract, see NSA 28 06, number 14179.

COO-3165-4/GA PC$3.00/MF$1.45
Cornell Univ., Ithaca, N. Y.
PLASMA HEATING WITH A RELATIVISTIC ELECTRON BEAM.
P. Korn, F. Sandel, and C. Wharton. 1972, 5p
CONF-730705-8
Contract AT(11-1)-3165

Descriptors: (*Plasma heating, *Electron beams), Relativistic range, Turbulence.

For abstract, see NSA 28 06, number 14164.

EUR-CEA-FC-636/GA PC$3.75/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
DEVELOPMENT OF A THOMSON SCATTERING EXPERIMENT UTILIZING THE RAYLEIGH SCATTERING PHENOMENON.
M. Hesse, and H. O. Tittel. Feb 73, 32p
In French. U.S. Sales Only.

Descriptors: (*Plasma diagnostics, *Thomson scattering), Beam optics, Calibration, Electron temperature, Focusing, Ion temperature, Laser radiation, Optical spectrometers, Photomultipliers, Plasma, Rayleigh scattering.

For abstract, see NSA 28 06, number 14173.

EUR-CEA-FC-675/GA PC$8.50/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
MILLIMETER WAVE POLARIMETERS AND THE COTTON--MOUTON EFFECT IN PLASMAS.
J. Mendonca. Dec 72, 129p
In French. U.S. Sales Only.

Descriptors: (*Plasma diagnostics, *Polarimeters), Magnetic fields, Magneto-optical effects, Microwave radiation, Polarization, Tokamak devices, Wave forms, Wave propagation.

For abstract, see NSA 28 06, number 14174.

EUR-CEA-FC-680/GA PC$3.00/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
ELECTROSTATIC ANALYZER FOR MEASURING THE PLASMA POTENTIAL IN THE CIRCE EXPERIMENT.
L. Dupas, and G. Melin. Jan 73, 17p
In French. U.S. Sales Only.

Descriptors: (*Electrostatic analyzers, *Plasma diagnostics), (*Circe devices, Plasma diagnostics), Collisions, Electric potential, Electrons, Energy spectra, Magnetic mirrors, Minimum-b fields, Neutral particles.

For abstract, see NSA 28 05, number 11952.

EUR-CEA-FC-683/GA PC$4.75/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
DIGITAL SIMULATION OF THE INTRODUCTION OF COLD OR ENERGETIC NEUTRAL PARTICLES INTO A HOT PLASMA.
J. P. Boujot, C. Mercier, J. P. Morera, and Jan 73, 51p
In French. U.S. Sales Only.

Descriptors: (*Tokamak devices, *Beam injection), (*Plasma simulation, Beam injection), Charge exchange, Computer codes, Electron temperature, Hot plasma, Ion temperature, Ionization, Neutral particles, Numerical solution, Plasma density, Time dependence, Velocity.

For abstract, see NSA 28 04, number 09792.

EUR-CEA-FC-685/GA PC$3.50/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
STUDY OF THE EVOLUTION OF A PLASMA NEAR A NEUTRAL POINT IN A MAGNETIC FIELD.
J. Pantuso Sudano. Jan 73, 26p
In French. U.S. Sales Only.

Descriptors: (*Plasma, *Motion), Analytical solution, Differential equations, Electric conductivity, Magnetic fields, Magnetohydrodynamics, Viscosity.

For abstract, see NSA 28 04, number 09793.

EUR-CEA-FC-690/GA PC$3.25/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
STOCHASTIC THEORY FOR HIGH TURBULENCE IN PLASMAS USING THE VLASOV APPROXIMATION.
J. H. Misguich. Feb 73, 23p
In French. U.S. Sales Only.

Descriptors: (*Plasma, *Boltzmann-vlasov equation), Distribution functions, Electric fields, Kinetic equations, Quasilinear problems, Stochastic processes, Turbulence.

For abstract, see NSA 28 06, number 14185.

FEI-359/GA PC$3.50/MF$1.45
Gosudarstvennyi Komitet Po Ispol'Zovaniyu Atomnoi Energii Sssr, Obninsk. Fiziko-Energeticheskii Institut.

CONCERNING ASYMPTOTIC SOLUTIONS OF NON-LINEAR EQUATIONS OF AUTO-OSCILLATIONS OF A PLASMIC LAYER.
V. A. Zherebtsov, and A. V. Shut'ko. 1972, 28p
In Russian. U.S. Sales Only.

Descriptors: (*Plasma waves, *Asymptotic solutions), Layers, Nonlinear problems, Oscillations, Plasma.

For abstract, see NSA 28 04, number 09856.

FRNC-TH-284/GA PC$5.45/MF$1.45
Paris Univ. (France).
STUDY OF NONLINEAR EFFECTS IN PARTIALLY IONIZED PLASMAS.
H. Chakroun. 1971, 73p
In French.

Descriptors: (*Homogeneous plasma, *Electric fields), Distribution functions, Electric currents, Electrons, Nonlinear problems, Partial ionization.

For abstract, see NSA 28 05, number 11973.

FRNC-TH-292/GA PC$7.60/MF$1.45
Paris Univ. (France).
COLLISIONAL CYCLOTRON INSTABILITY IN RAMSAUER EFFECT IONIZED GASES.
C. Oddou. 1971, 155p
In French.

Descriptors: (*Plasma instability, *Cyclotron instability), (*Electric discharges, *Ramsauer effect), Collisions, Cyclotron frequency, Electron density, Emission, Khz range 01-100, Magnetic fields, Microwave radiation, Oscillations, Pulses, Xenon.

For abstract, see NSA 28 05, number 11990.

FRNC-TH-329/GA PC$7.60/MF$1.45
Nancy Univ. (France).
MATHEMATICAL MODELS FOR NONCOLLISIONAL PLASMAS.
P. Bertrand. 1972, 157p
In French. U.S. Sales Only.

Descriptors: (*Collisionless plasma, *Boltzmann-vlasov equation), Inhomogeneous plasma, Mathematical models, Nonlinear problems, Phase space, Plasma instability, Two-stream instability.

For abstract, see NSA 28 04, number 09794.

FRNC-TH-371/GA PC$5.50/MF$1.45
Paris Univ., Orsay (France).
STUDY OF A NONLINEAR DIFFUSION PROBLEM RELATED TO PLASMA PHYSICS.
J. P. Saussais. 1972, 69p
In French. U.S. Sales Only.

Descriptors: (*Plasma, *Confinement), (*Tokamak devices, Confinement), Eigenvalues, Electric currents, Electron temperature, Finite difference method, Magnetohydrodynamics, Nonlinear problems, Stability, Time dependence.

For abstract, see NSA 28 06, number 14167.

FRNC-TH-373/GA PC$7.50/MF$1.45
Paris Univ., Orsay (France).
STABILIZATION OF DRIFT WAVES BY A MAGNETIC FIELD IN WHICH THE LINES OF FORCE ARE SHEARED.
T. Khiet. 1971, 107p
In French. U.S. Sales Only.

Descriptors: (*Plasma instability, *Drift instability), Dispersion relations, Inhomogeneous plasma, Magnetic fields, Nonlinear problems, Shear, Stability, Turbulence, Wave packets, Wave propagation.

For abstract, see NSA 28 06, number 14194.

IPP-IV-49/GA PC$11.25/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
INVESTIGATION OF RELAXATION EFFECTS BEHIND REFLECTED SHOCK FRONTS IN SHOCK HEATED, PARTIALLY IONIZED ARGON PLASMAS.
W. Zimmermann, and H. Muntenbruch. Dec 72, 181p
In German. U.S. Sales Only.

Descriptors: (*Plasma, *Shock heating), (*Shock waves, *Plasma heating), Argon, Ionization, Mach number, Magnetic fields, Reflection, Relaxation.

For abstract, see NSA 28 04, number 09738.

IPP-2/208/GA PC$3.50/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
KINETIC MODEL FOR THE NEUTRAL GAS BETWEEN PLASMA AND WALL.
S. Rehker, and H. Wobig. Jan 73, 26p
U.S. Sales Only.

Descriptors: Boltzmann equation, Collisions, Distribution functions, Gases, Inelastic scattering, Integral equations, Plasma, Wall effect.

For abstract, see NSA 28 04, number 09795.

IPP-2/209/GA PC$3.00/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
USE OF RESONANCE FOR THE DYNAMIC STABILIZATION OF THE RAYLEIGH--TAYLOR INSTABILITY AND FOR THE EXCITATION OF THE RELATED PARAMETRIC INSTABILITIES.
H. Holitzner, and G. H. Wolf. Feb 73, 11p
U.S. Sales Only.

Descriptors: (*Plasma instability, *Rayleigh-taylor instability), Boundary layers, Eigenfrequency, Electric fields, Excitation, Gases, Liquids, Resonance, Stability.

For abstract, see NSA 28 04, number 09814.

IPP-6/117/GA PC$4.25/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
STABILITY OF TWO-DIMENSIONAL COLLISION-FREE PLASMAS.
K. Schindler, D. Pfirsch, and H. Wobig. Feb 73, 43p
U.S. Sales Only.

Descriptors: (*Plasma instability, *Two-dimensional calculations), Boltzmann-vlasov equation, Collisionless plasma, Instability growth rates.

For abstract, see NSA 28 04, number 09815.

IPPJ-DT-30/GA PC$4.00/MF$1.45
Nagoya Univ. (Japan). Inst. Of Plasma Physics.
SHAPING OF LASER PULSES BY THE USE OF A LASER TRIGGERED SPARK GAP AND A POCKEL CELL.
K. Yoshida, K. Shimamura, T. Yamanaka, C. Yamanaka, and T. Sasaki. Jan 72, 15p
In Japanese. U.S. Sales Only.

Descriptors: (*Laser radiation, *Shape), Argon, Nitrogen, Polarization, Pulses, Spark gaps, Switches.

For abstract, see NSA 28 04, number 09769.

IPPJ-137/GA PC$4.00/MF$1.45
Nagoya Univ. (Japan). Inst. Of Plasma Physics.
NONLINEAR SCHROEDINGER EQUATION FOR LANGMUIR WAVES.
B. D. Fried, and Y. H. Ichikawa. Aug 72, 39p
U.S. Sales Only.

Descriptors: (*Plasma waves, *Schroedinger equation), Boltzmann-vlasov equation, Charged particles, Langmuir frequency, Nonlinear problems, Resonance.

For abstract, see NSA 28 04, number 09857.

IPPJ-139/GA PC$4.00/MF$1.45
Nagoya Univ. (Japan). Inst. Of Plasma Physics.
NONLINEAR MAGNETOSONIC WAVES PROPAGATING IN A MAGNETIC NEUTRAL SHEET.
J. Sakai. Oct 72, 27p
U.S. Sales Only.

Descriptors: (*Magnetoacoustics, *Wave propagation), Magnetic fields, Plasma, Plasma production, Shock waves.

For abstract, see NSA 28 06, number 13593.

IPPJ-140/GA PC$4.00/MF$1.45
Nagoya Univ. (Japan). Inst. Of Plasma Physics.
GENERATION OF ENERGETIC ELECTRONS BY ELECTRON CYCLOTRON HEATING IN A MAGNETIC MIRROR FIELD.
H. Ikegami, S. Aihara, M. Hosokawa, and H. Aikawa. Sep 72, 39p
U.S. Sales Only.

Descriptors: (*Plasma heating, *Ecr heating), (*Magnetic mirrors, Ecr heating), Cyclotron frequency, Electrons.

For abstract, see NSA 28 04, number 09740.

IPPJ-141/GA PC$4.00/MF$1.45
Nagoya Univ. (Japan). Inst. Of Plasma Physics.
CRITICAL BETA /SUB P/ IN A TORUS WITH RECTANGULAR CROSS SECTION.
Y. Suzuki. Oct 72, 14p
U.S. Sales Only.

Descriptors: (*Plasma, *Toroidal configuration), Configuration, Equilibrium, Magnetic fields, Magnetohydrodynamics.

For abstract, see NSA 28 04, number 09842.

ITF-73-8-E/GA PC$3.00/MF$1.45
Akademiya Nauk Ukrainskoi SSR, Kiev. Institut Teoreticheskoi Fiziki.
NONLINEAR WAVE INTERACTION AND FLUCTUATIONS IN PLASMA.
A. G. Sitenko. 1973, 20p
U.S. Sales Only.

Descriptors: (*Plasma waves, *Nonlinear problems), Distribution, Eigenfrequency, Langmuir frequency, Magnetic susceptibility, Spectra.

For abstract, see NSA 28 04, number 09858.

JAERI-M-4961/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
BEHAVIOUR OF IMPURITY IONS IN A TOKAMAK PLASMA.
M. Tanaka, M. Yoshikawa, K. Inoue, and T. Tazima. Sep 72, 13p
In Japanese. U.S. Sales Only.

Descriptors: (*Tokamak devices, *Impurities), Analytical solution, Diffusion, Distribution, Hot plasma, Ions, Oxygen, Plasma.

For abstract, see NSA 28 04, number 09843.

JAERI-M-5021/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
MEASUREMENTS OF VERTICAL MAGNETIC FIELDS IN JFT-2.
S. Matsuda, T. Ohga, N. Suzuki, and N. Fujisawa. Oct 72, 27p
In Japanese. U.S. Sales Only.

Descriptors: (*Jft devices, *Magnetic fields), Magnetic probes, Surfaces.

For abstract, see NSA 28 04, number 09844.

JAERI-M-5035/GA PC$4.00/MF$1.45
Japan Atomic Energy Research Inst., Tokyo.
EFFECT OF THE DYNAMIC LIMITER ON PLASMA DIFFUSION.
S. Matsuda. Nov 72, 14p
In Japanese. U.S. Sales Only.

Descriptors: (*Plasma drift, *Jft devices), Diffusion, Plasma density.

For abstract, see NSA 28 04, number 09741.

KHFTI-72-24/GA PC$6.00/MF$1.45
Akademiya Nauk Ukrainskoi SSR, Kharkov. Fiziko-Tekhnicheskii Institut.
INTERACTION OF FINITE AMPLITUDE WAVES WITH A PLASMA.
V. D. Shapiro, and V. I. Shevchenko. 1972, 79p
In Russian. U.S. Sales Only.

Descriptors: (*Plasma, *Electromagnetic radiation), Excitation, Interactions, Nonlinear problems, Plasma instability, Resonance.

For abstract, see NSA 28 04, number 09859.

I.A-5132-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
NONLINEAR DIFFUSION OF PULSED MAGNETIC FIELDS IN PLANAR AND CYLINDRICAL PLASMAS.
A. Haberstich. Jun 73, 13p
Contract W-7405-eng-36

Descriptors: (*Plasma drift, *Magnetic fields), Analytical solution, Cylindrical configuration, Diffusion, Finite difference method, Nonlinear problems, Pinch effect, Pulses.

For abstract, see NSA 28 05, number 11948.

LA-5269-MS/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ENERGY LOSS OF A RELATIVISTIC ELECTRON BEAM IN A PLASMA.
R. A. Gerwin. May 73, 15p
Contract W-7405-eng-36

Descriptors: (*Beam-plasma systems, *Energy losses), Cold plasma, Electron beams, Maxwell equations, Relativistic range.

For abstract, see NSA 28 05, number 11974.

LS-255/GA PC$6.50/MF$1.45
Israel Atomic Energy Commission, Yavne. Soreq Nuclear Research Center.
SELECTED BIBLIOGRAPHY ON PLASMA PRODUCTION BY LASERS.
S. Weil. Jan 73, 89p
U.S. Sales Only.

Descriptors: (*Laser-produced plasma, *Bibliographies).

For abstract, see NSA 28 05, number 11983.

N-73-13704/GA PC$4.00/MF$1.45
California Univ., Los Angeles.
PHYSICAL PICTURE FOR THE ANOMALOUS PROPAGATION OF ORDINARY ELECTROMAGNETIC WAVES IN A PLASMA.
B. D. Fried. Jun 72, 11p NASA-CR-129673, IPPJ-130

Descriptors: (*Plasma, *Electromagnetic radiation), Anisotropy, Cyclotron resonance, Distribution, Langmuir frequency, Magnetic fields, Velocity, Wave propagation.

For abstract, see NSA 28 04, number 09860.

N-73-16686/GA PC$7.60/MF$1.45
Stanford Univ., Calif. Inst. For Plasma Research.
NONLINEAR WAVE INTERACTION IN A PLASMA COLUMN.
J. M. Larsen. Oct 72, 174p NASA-CR-130350, SU-IPR-493
Contract N00014-67-A-0112-0044

Descriptors: (*Plasma waves, *Interactions), Cold plasma, Coupling, Electrons, Langmuir frequency, Nonlinear problems.

For abstract, see NSA 28 04, number 09861.

N-73-16693/GA PC$5.45/MF$1.45
National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.
THEORETICAL AND EXPERIMENTAL INVESTIGATION OF THE LINEAR AND NONLINEAR IMPULSE RESPONSES FROM A MAGNETOPLASMA COLUMN.
N. C. Grody. Feb 73, 72p NASA-TR-R-400, G-1072

Descriptors: (*Plasma waves, *Inhomogeneous plasma), Cold plasma, Damping, Electric fields, Magnetic fields, Nonlinear problems, Pulses.

For abstract, see NSA 28 04, number 09862.

N73-29126/2GA PC$3.25/MF$1.45
Nagoya Univ. (Japan). Inst. of Plasma Physics.
EQUIVALENT CIRCUIT FOR ION CYCLOTRON WAVES.
K. Matsuura. May 73, 23p IPPJ-160

Descriptors: *Equivalent circuits, *Ion cyclotron radiation, *Ionic waves, Electromagnetic fields, Plasma frequencies, Wave excitation.

For abstract, see STAR 1120

N73-29751/7GA PC$3.00/MF$1.45
Scientific Translation Service, Santa Barbara, Calif.
CORRELATION BETWEEN THE POTENTIAL AND DENSITY FLUCTUATIONS OF A PLASMA, AND THE CONVECTIVE TRANSPORT OF PARTICLES ACROSS THE MAGNETIC FIELD IN A PENNING DISCHARGE IN THE PRESENCE OF ROTATIONAL INSTABILITY.
L. I. Romanyuk, and V. M. Slobodyan. Aug 73, 13p NASA-TT-F-15026
Contract NASW-2483
Tran-Transl. Into English from Ukr. Fiz. Zh. (Kiev), V. 18, No. 3, 3 Mar. 1973 p 455-460.

Descriptors: *Magnetohydrodynamic stability, *Penning discharge, *Plasma density, *Plasma oscillations, *Rotating plasmas, Magnetic fields, Perturbation, Plasma diagnostics, Plasma frequencies.

For abstract, see STAR 1120

N73-29752/5GA PC$3.00/MF$1.45
Kanner (Leo) Associates, Redwood City, Calif.
STABILITY OF A PLASMA ROTATING IN CROSSED ELECTRICAL AND MAGNETIC FIELDS.
V. V. Dolgopolov, V. L. Sizonenko, and K. N. Stepanov. Aug 73, 19p NASA-TT-F-15021
Contract NASW-2481
Tran-Transl. Into English from Ukr. Fiz. Zh., USSR, V. 18, No. 1, 1973 p 18-28.

Descriptors: *Cyclotron frequency, *Oscillations, *Rotating plasmas, Electric fields, Magnetic fields, Nonuniform plasmas, Plasma waves.

For abstract, see STAR 1120

N73-29753/3GA PC$3.25/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
RATE EFFECTS ON INSTABILITIES IN SLIGHTLY IONIZED PLASMAS.
K. G. Harstad. 15 Jul 73, 22p NASA-CR-133599, JPL-TM-33-642
Contract NAS7-100

Descriptors: *Magnetohydrodynamic stability, *Plasma physics, *Wave propagation, Argon, Hall effect, Magnetohydrodynamics, Perturbation.

For abstract, see STAR 1120

N73-29754/1GA PC$4.50/MF$1.45
Nagoya Univ. (Japan). Inst. of Plasma Physics.
ON TOKAMAK EQUILIBRIUM.
A. Yoshii, M. Wakatani, and T. Amano. May 73, 48p IPPJ-161

Descriptors: *Plasma control, *Tokamak fusion reactors, *Toroidal plasmas, Equilibrium, High pressure, Magnetic fields.

For abstract, see STAR 1120

N73-29755/8GA PC$3.50/MF$1.45
Nagoya Univ. (Japan). Inst. of Plasma Physics.
NONLINEAR WAVE MODULATION IN A MAGNETIZED COLLISIONLESS PLASMA.
M. Kako, Y. Furutani, Y. H. Ichikawa, and T. Taniutt. May 73, 27p IPPJ-162

Descriptors: *Collisionless plasmas, *Nonlinear systems, *Schroedinger equation, *Wave propagation, Electromagnetic radiation, Nonlinear equations.

For abstract, see STAR 1120

N73-29756/6GA PC$3.75/MF$1.45
Nagoya Univ. (Japan). Inst. of Plasma Physics.
COLLISIONLESS ELECTRON PLASMA WAVE SHOCKS.
K. Saeki, H. Ikezi, and Y. Amagishi. May 73, 35p IPPJ-163

Descriptors: *Collisionless plasmas, *Electrons, *Shock waves, Oscillations, Wave propagation.

For abstract, see STAR 1120

N73-29757/4GA PC$4.00/MF$1.45
Nagoya Univ. (Japan). Inst. of Plasma Physics.
THE STUDY OF THE PRE-IONIZATION OF THE FAST TOROIDAL PINCH.
K. Hirano. Jun 73, 40p IPPJ-164

Descriptors: *Electron guns, *Ionization, *Pinch effect, *Toroidal plasmas, Electron beams, Turbulent diffusion.

For abstract, see STAR 1120

N73-29758/2GA PC$3.00/MF$1.45
Nagoya Univ. (Japan). Inst. of Plasma Physics.
COLLISIONAL ABSORPTION OF ION-ION HYBRID WAVE.
H. Toyama, and K. Matsuura. Jun 73, 15p IPPJ-165

Descriptors: *Ion beams, *Plasma heating, *Resonance, Mathematical models, Thermonuclear reactions.

For abstract, see STAR 1120

N73-29759/0GA PC$3.00/MF$1.45
Nagoya Univ. (Japan). Inst. of Plasma Physics.
THE SHEAR STABILIZATION OF THE COLLISIONLESS DRIFT WAVE INSTABILITY.
Y. Nishida, T. Dodo, I. Kuroda, and G. Horikoshi. Jun 73, 14p IPPJ-166

Descriptors: *Collisionless plasmas, *Ionic waves, *Magnetohydrodynamic stability, Helical windings, Landau damping, Magnetic flux.

For abstract, see STAR 1120

N73-29760/8GA PC$3.75/MF$1.45
Kernforschungsanlage, Juelich (West Germany). Inst. fuer Technische Physik.
COHERENT RESPONSE OF A PLASMA TO LINEAR WAVE FIELDS.
C. S. Helrich. Oct 72, 32p JUL-895-TP

Descriptors: *Conservation equations, *Plasma oscillations, *Plasma waves, Energy transfer, Kinetic energy, Maxwell equation, Particle energy, Poynting theorem.

For abstract, see STAR 1120

N73-29761/6GA PC$3.00/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
ACCESSIBILITY TO THE LOWER HYBRID RESONANCE.
S. Puri, and M. Tutter. Jan 73, 15p IPP-IV-51

Descriptors: *Electromagnetic radiation, *Plasma resonance, Radio frequencies, Transverse waves, Vacuum, Waveguides.

For abstract, see STAR 1120

ORO-3405-37/GA PC$3.00/MF$1.45
Maryland Univ., College Park. Inst. For Fluid Dynamics and Applied Mathematics.
INVESTIGATION OF UNIVERSAL PLASMA INSTABILITIES. ANNUAL PROGRESS REPORT NO. 8.
1 Jun 73, 15p
Contract AT(40-1)-3405

Descriptors: (*Plasma instability, *Ion acoustic waves), (*Q devices, Plasma instability), Beam-plasma systems, Collisionless plasma, Electric conductivity, Plasma waves, Research programs, Turbulence.

For abstract, see NSA 28 06, number 14195.

PAT-APPL-318151/GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
METHOD AND APPARATUS FOR DETERMINING PROPERTIES OF A PLASMA.
Patent Application.
K. W. Billman, P. D. Rowley, J. R. Stallcop, and L. L. Presley. Filed 26 Dec 72, 15p NASA-CASE-ARC-10598-1,
Government-owned invention available for licensing. Copy of application available NTIS.

Descriptors: *Electron density profiles, *Electron distribution, *Plasma diagnostics, *Plasma flux measurements, *Plasma temperature, Equipment specifications, Patent applications, Test equipment.

A method and apparatus for determining the temperature and/or electron density of a plasma are discussed. The device includes the use of first and second monochromatic light beams at seperate wave lengths for probing the plasma to derive absorption coefficients for solving the simultaneous equations for determining the parameters of the plasma. Diagrams of the equipment and the principles of operation are included.

SAN-799-X-1/GA PC$3.00/MF$1.45
San Francisco Operations Office (Aec), Calif.
RESEARCH INTO AND USE OF COMPUTER MODELS OF PLASMAS IN CONTROLLED THERMONUCLEAR RESEARCH. PROGRESS REPORT, DECEMBER 1, 1972--APRIL 30, 1973.
O. Buneman, and C. Barnes. 1973, 2p
Contract AT(04-3)-799

Descriptors: (*Plasma simulation, *Mathematical models), Computer codes.

For abstract, see NSA 28 05, number 11975.

SLA-73-5363/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
HIGH CURRENT DENSITY ELECTRON BEAM APPLICATION TO FUSION STUDIES.
G. Yonas, J. W. Poukey, J. R. Freeman, K. R. Prestwich, and A. J. Toepfer. 5p CONF-730705-10

Descriptors: (*Plasma production, *Electron beams), Compression, Deuterium, Tritium.

For abstract, see NSA 28 06, number 14189.

SLA-73-5470/GA PC$5.25/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
APPLICATIONS OF HIGH INTENSITY RELATIVISTIC ELECTRON BEAMS TO PULSED FUSION AND COLLECTIVE ION ACCELERATION.
G. Yonas. 1973, 62p

Descriptors: (*Plasma production, *Electron beams), (*Collective accelerators, Electron beams), (*Electron sources, *Diode tubes), Deuterium, Focusing, Fuel pellets, Plasma, Pulses, Relativistic range, Tritium.

For abstract, see NSA 28 04, number 09805.

SLA-73-5483/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
HOLOGRAPHIC MEASUREMENTS OF THE PLASMAS IN A HIGH-CURRENT FIELD EMISSION DIODE.
L. P. Mix, J. G. Kelly, G. W. Kuswa, D. W. Swain, and J. N. Olsen. 1973, 14p CONF-730529-3

Descriptors: (*Diode tubes, *Plasma diagnostics), Anodes, Electron beams, Holography, Plasma density.

For abstract, see NSA 28 05, number 12585.

UCID-16218/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
STREAK CAMERA TUBE DEVELOPMENT.
R. Kalibjian, and C. McConaghy. 2 Mar 73, 6p

Descriptors: (*Cameras, *Streak photography), (*Plasma diagnostics, Cameras), Camera tubes, Cathode ray tubes, Cathodes.

For abstract, see NSA 28 04, number 09762.

UCID-16222/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
REVIEW OF PELLET CONCEPT; MOTIVATION FOR PLASMA PHYSICS STUDIES.
S. E. Bodner. 19 Mar 73, 12p CONF-730335-1
Contract W-7405-Eng-48

Descriptors: (*Laser-produced plasma, *Fuel pellets), Absorption, Compression, Electrons, Mean free path, Plasma density, Plasma simulation, Reviews.

For abstract, see NSA 28 06, number 14190.

UCID-16268/GA PC$9.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
HOSE THEORY.
E. P. Lee. 16 May 73, 139p
Contract W-7405-eng-48

Descriptors: (*Plasma instability, *Hose instability), Electron beams, Expansion, Pulses, Relativistic range, Stability.

For abstract, see NSA 28 05, number 11993.

UCID-16272/GA PC$3.25/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
NEW MATERIAL PREPARED FOR PRESENTATION DURING FORTHCOMING EUROPEAN TRIP.
J. W. Shearer. 22 May 73, 22p
Contract W-7405-eng-48

Descriptors: (*Laser-produced plasma, *Lectures), Interactions, Laser radiation, Plasma instability.

For abstract, see NSA 28 05, number 11985.

UCRL-13576/GA PC$7.25/MF$1.45
Brigham Young Univ., Provo, Utah (Usa). Dept. Of Physics and Astronomy.
STUDY OF THE TECHNIQUE OF UTILIZING A MICROWAVE FABRY--PEROT RESONATOR TO OBTAIN SPATIAL ELECTRON DENSITY DISTRIBUTIONS IN A MINIMUM-B PLASMA.
K. W. Struve. 15 May 73, 105p
Contract W-7405-eng-48

Descriptors: (*Plasma diagnostics, *Fabry-perot interferometer), Cyclotron resonance, Electron density, Electrons, Microwave radiation, Minimum-b fields, Polarization.

For abstract, see NSA 28 06, number 14175.

UCRL-50021-72-2/GA PC$7.60/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
LASER-FUSION PROGRAM SEMIANNUAL REPORT, JULY--DECEMBER 1972.
S. S. Sussman, W. Clements, and G. Shaw. 9 Feb 73, 157p
Contract W-7405-eng-48

Descriptors: (*Lasers, *Design), (*Laser-produced plasma, *Research programs), (*Plasma diagnostics, *Laser radiation), Holography, Scattering.

For abstract, see NSA 28 04, number 09806.

UCRL-50022-4/GA PC$3.75/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
LLL LASER PROJECTS REPORT NO. 4.
G. I. Kachen, S. S. Sussman, and W. Clements.
Mar 73, 35p
Contract W-7405-eng-48

Descriptors: (*Lasers, *Research programs), (*Laser-produced plasma, Research programs), Carbon dioxide, Holography, Laser-radiation heating, Magnetic fields, Neutrons, Nondestructive testing, Pulse amplifiers, Pulses, Sulfur fluorides, Ultraviolet radiation, X-ray sources.

For abstract, see NSA 28 04, number 09849.

UCRL-51373/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
PLASMA EXPANDER FOR VENETIAN BLIND DIRECT CONVERTERS.
R. R. Smith. 6 Apr 73, 11p
Contract W-7405-eng-48

Descriptors: (*Direct energy converters, *Plasma expansion), (*Thermonuclear reactors, Direct energy converters), Configuration, Ions, Magnetic fields, Magnetic moments.

For abstract, see NSA 28 04, number 08054.

UCRL-74628/GA PC$3.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.

COMPARISON OF LASER-HEATED FUSION PLASMA PROPOSALS.
J. W. Shearer. 10 Mar 73, 6p CONF-730705-9

Descriptors: (*Plasma heating, *Laser-radiation heating), Collisions, Compression, Hydrogen, Lasers, Reviews.

For abstract, see NSA 28 05, number 11949.

20J. Quantum Theory

AD-767 857/6GA Reprint
National Bureau of Standards Washington D C
SYSTEMATIC TRENDS AND ATOMIC OSCILLATOR STRENGTHS,
M. W. Smith, G. A. Martin, and W. L. Wiese. 1973, 8p
Availability: Pub. in the Nuclear Instruments and Methods, v110 p219-226 1973.

Descriptors: (*Atomic energy levels, Periodic variations), (*Electron transitions, Intensity), Beryllium, Carbon, Aluminum, Lithium, Sodium, Gallium, Indium, Thallium, Quantum mechanics.
Identifiers: Beam foil spectroscopy, *Oscillator strengths.

A number of newly established or significantly improved systematic trends of atomic oscillator strengths in isoelectronic sequences and spectral series are presented. For most of these trends, beam-foil experiments have played a prominent role in supplying critically needed points. Of particular interest are the changes in several transitions of the Be and C sequences brought about by improved beam-foil results and more refined theoretical calculations. Also of significance are newly detected trends in the Li and Al isoelectronic sequences. An example will be given where the analysis of the f-value dependence along a sequence, coupled with an understanding of the changes in the energy level structure, points out areas where future beam-foil experiments would be desirable in clearing up discrepancies. The n*3 dependence of oscillator strengths for perturbed series will be illustrated with another interesting example. (Author)

AD-768 240/4GA Reprint
Pittsburgh Univ Pa Dept of Physics
CONSTRUCTING VARIATIONAL PRINCIPLES,
E. Gerjuoy, A. R. P. Rau, and Larry Spruch. 15 Feb 73, 4p
Contract N00014-67-A-0467-0007, Grant DA-ARO-D-31-124-72-G72
Sponsored in part by Grant NGL-39-011-035. Prepared in cooperation with New York Univ., N.Y. Dept. of Physics.
Availability: Pub. in Physical Review A, v8 n2 p662-665 Aug 73.

Descriptors: (*Quantum mechanics, Calculus of variations), Matrix algebra, Wave functions.
Identifiers: Schrodinger equation.

AD-768 242/0GA Reprint
New York Univ N Y Dept of Physics
UPPER AND LOWER BOUNDS ON QUANTUM-MECHANICAL MATRIX ELEMENTS.
Doctoral thesis,
Robert Blau, A. R. P. Rau, and Larry Spruch. 18 Sep 72, 12p
Contract N00014-67-A-0467-0007, Grant DA-ARO-D-31-124-72-G92
Availability: Pub. in Physical Review A, v8 n1 p119-130 Jul 73.

Descriptors: (*Quantum mechanics, Matrix algebra), Wave functions, Inequalities, Integrals, Operators(Mathematics).

The authors will be concerned with the determination of bounds of matrix elements, (W sub n m) identically = (Psi sub n), W(Psi sub m)) with a Hermitian inner product, of an arbitrary Hermitian operator W with respect to an orthonormal set of eigenfunctions defined by (H-E sub n) Psi sub n=0.

AD-768 262/8GA PC$3.00/MF$1.45
Cornell Univ Ithaca N Y
ON THE RADIAL MOMENTUM OPERATOR,
Richard L. Liboff, Isaiah Nebenzahl, and Hans H. Fleischmann. 5 Mar 73, 7p Rept no. AJP-976-73
Contract N00014-67-A-0077-0015
Revision of report dated 11 Aug 72.
Availability: Pub. in AJP, v41 p976-980 Aug 73.

Descriptors: (*Quantum mechanics, Operators(Mathematics)), Wave functions, Kinetic energy.

The validity of the radial momentum operator as an observable equivalent is investigated. In addition to the fundamental mathematical prescription, purely physical arguments are presented which demonstrate its inadmissibility. This remains in spite of its correct commutator relationship with the radial coordinate. In the course of presenting these arguments, the condition (r sup 1/2) Psi (r) nears 0, r nears 0, is derived to be a necessary condition that Psi be an acceptable wave function. (Author)

BARC-658/GA PC$3.50/MF$1.45
Bhabha Atomic Research Centre, Bombay (India).
PROGRAM KNMATICS: TWO BODY NUCLEAR RELATIVISTIC KINEMATICS.
D. K. Srivastava, and N. K. Ganguly. 1973, 30p
U.S. Sales Only.

Descriptors: (*Computer codes, *K codes), (*Nuclear reaction kinetics, *Two-body problem), Differential cross sections, Energy, Nuclear reactions, Relativity theory.

For abstract, see NSA 28 05, number 11913.

CNRS-CPT-72-P-499/GA PC$3.00/MF$1.45
Centre National de la Recherche Scientifique, Marseilles (France). Centre de Physique Theorique.
EXPLICIT-TIME DEPENDENT INVARIANCE PROPERTIES OF QUANTUM MECHANICAL SYSTEMS.
G. Burdet, M. Perrin, and P. Sorba. Dec 72, 18p
U.S. Sales Only.

Descriptors: (*Quantum mechanics, *Time dependence), Algebra, Particles, Schroedinger equation.

For abstract, see NSA 28 04, number 09904.

COO-3533-10/GA PC$3.00/MF$1.45
Syracuse Univ., N. Y. Dept. Of Physics.
RELATIVISTIC INVARIANCE AND DISCRETE SYMMETRIES.
A. P. Balachandran. Dec 72, 8p CONF-720732-1, SU-4205-10
Contract AT(11-1)-3533

Descriptors: (*Symmetry, *Quantum mechanics), (*Invariance principles, Quantum mechanics), Relativity theory, Rotational invariance, Space-time.

For abstract, see NSA 28 05, number 11772.

DESY-73/10/GA PC$3.75/MF$1.45
Deutsches Elektronen-Synchrotron, Hamburg (West Germany).
MODEL OF LINEARIZED DEVIATIONS IN THE QUANTUM THEORY OF GRAVITY.
J. Tarski. Apr 73, 34p
U.S. Sales Only.

Descriptors: Gravitation, Ground states, Quantum mechanics, Surfaces, Universe.

For abstract, see NSA 28 05, number 12032.

DESY-73/6/GA PC$5.00/MF$1.45
Deutsches Elektronen-Synchrotron, Hamburg (West Germany).
INFRARED SINGULARITIES AND SMALL-DISTANCE-BEHAVIOUR ANALYSIS.
K. Symanzik. Mar 73, 59p
U.S. Sales Only.

Descriptors: (*Quantum field theory, *Infrared divergences), Distance, Renormalization, Singularity, Vertex functions.

For abstract, see NSA 28 05, number 12024.

JINR-E2-7045/GA PC$3.25/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
PRESENT STATUS OF QUANTUM FIELD THEORY.
D. I. Blokhintsev. 1973, 23p CONF-730435-1
U.S. Sales Only.

Descriptors: (*Quantum field theory, *Reviews), Chiral symmetry, Current algebra, Eikonal approximation, S matrix, Scale invariance, Yang-mills theory.

For abstract, see NSA 28 05, number 12025.

JINR-P2-7052/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
SIMPLE PROOF OF THE EXTREMUM PROPERTY OF NODELESS SOLUTION OF SCHROEDINGER EQUATION.
L. G. Zastavenko. 1973, 5p
In Russian. U.S. Sales Only.

Descriptors: Quantum mechanics, Schroedinger equation.

For abstract, see NSA 28 04, number 09905.

JINR-P2-7068/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
COVARIANT COORDINATES.
V. N. Strel'tsov. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*Quantum mechanics, *Statistical models), Angular momentum, Coordinates, Galilei transformations, Linear momentum, Relativity theory.

For abstract, see NSA 28 04, number 10497.

JINR-P2-7114/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
SIMPLE PROPERTY OF THE GROUND STATE FUNCTIONAL IN THE MODEL OF QUANTUM BOSON FIELD THEORY WITH SELF-ACTION.
L. G. Zastavenko. 1973, 12p
In Russian. U.S. Sales Only.

Descriptors: (*Quantum field theory, *Functionals), (*Bosons, Quantum field theory), Ground states.

For abstract, see NSA 28 06, number 14272.

JINR-P2-7117/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of High Energy.
LIGHT VELOCITY AND DEFINITION OF THE CONCEPTION ABOUT THE LENGTH IN THE GENERAL THEORY OF RELATIVITY.
V. N. Strel'tsov. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*General relativity theory, *Length), Distance, Signals, Velocity, Visible radiation.

For abstract, see NSA 28 06, number 13645.

JINR-P2-7129/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
ORTHOGONALITY OF PHYSICAL AND MATHEMATICAL VACUA IN THE SIMPLEST QUANTUM FIELD THEORY MODEL.
L. G. Zastavenko. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: Mathematical space, Quantum field theory, Scalar fields.

For abstract, see NSA 28 06, number 14273.

N73-29734/3GA PC$3.25/MF$1.45
Gifu Univ. (Japan). Dept. of Physics.
CONSTRUCTION OF HIGH-SPIN PROPAGATORS.
M. Kobayashi, and Y. Mori. Apr 73, 23p DPGU-01-73

Descriptors: *Particle spin, *Propagation, *Quantum electrodynamics, *Shell theory, Electromagnetic fields, Theoretical physics.

For abstract, see STAR 1120

ORO-3992-125/GA PC$3.00/MF$1.45
Texas Univ., Austin. Center for Particle Theory.
MASS ZERO INDECOMPOSABLE REPRESENTATIONS OF THE POINCARE GROUP.
P. M. Mathews, M. Seetharaman, and M. T. Simon. 1973, 16p CPT-86

Descriptors: (*Lorentz groups, *Irreducible representations), (*Poincare groups, Irreducible representations), (*Elementary particles, *Wave functions).

For abstract, see NSA 28 04, number 09431.

20K. Solid Mechanics

AD-767 693/5GA PC$3.00/MF$1.45
Army Foreign Science and Technology Center Charlottesville Va
PROPAGATION OF LONGITUDINAL VISOELASTIC WAVES IN A THREE LAYER MEDIUM,
P. F. Sabodash. 13 Mar 73, 9p Rept no. FSTC-HT-23-1991-72
Trans. of Mekhanika Polimerov (USSR) n7 p151-156 Jan/Feb 71.

Descriptors: (*Viscoelasticity, Mechanical waves), Partial differential equations, Numerical analysis, USSR.
Identifiers: Translations, Longitudinal waves, Elastic waves.

Using a linear formulation, the author solves the non-stationary problem of transmission of a planar unidimensional longitudinal wave of stresses through a plane-parallel visco-elastic layer of finite thickness separating two linearly elastic half-spaces with different properties. The plane wave propagating in one of the elastic half-spaces strikes the layer boundary at right angles (unidimensional problem). The field in the other elastic half-space, excited as a result of multiple reflection of the fronts from the boundaries of the layer, is studied. Graphs of small displacements at a given point of elastic half-space are given.

AD-767 796/6GA PC$3.50/MF$1.45
Technion - Israel Inst of Tech Haifa Dept of Aeronautical Engineering
MULTI-DIMENSIONAL WAVE PROPAGATION IN SOLIDS DUE TO IMPACT LOADING BY THE METHOD OF CHARACTERISTICS. CASE 1. COMPUTATIONAL METHOD FOR TWO-DIMENSIONAL WAVES IN A LINEAR ELASTIC SOLID.
Interim rept.,
Moche Ziv. Apr 73, 67p Rept nos. TAE-178, Scientific-1 AFOSR-TR-73-1722
Grant AF-AFOSR-2330-72

Descriptors: (*Impact shock, Mechanical waves), (*Deformation, Partial differential equations), Boundary value problems, Loading(Mechanics), Integration, Israel.
Identifiers: Eigenvectors, Eigenvalues, Method of characteristics, Hyperbolic differential equations, Numerical integration, *Stress waves.

A computational method is presented for the solution of multi-dimensional hyperbolic partial differential equations governing the dynamic deformation of solids. The method is based on characteristics formulation of the hyperbolic differential equations. Thus generated waves are located in the medium and the differential equations holding along these waves are obtained. The algorithm consists of a new method which evaluates the unknown variables along the leading wave and then couples the first generator to the motion behind it. The unknowns along the leading wave are resolved by means of kinematic and dynamic conditions existing across this wave. The entire multi-dimensional solution domain is then linked to the leading wave by the method of characteristics. The mathematical avenues used to develop this computational method are potentially capable of solving multi-dimensional wave problems in various types of solids. As a first step in the report, the described technique is confined to field equations defining the deformation of a linear elastic solid in two-space and time independent variables. (Author)

AD-767 885/7GA PC$5.75/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
THE INTERACTION OF WEAK SHOCK WAVES WITH ELASTIC STRUCTURES,
E. I. Grigolyuk, and A. G. Gorshkov. 10 Aug 73, 247p Rept no. FTD-HT-23-675-63
Edited trans. of Vzaimodeiatvie Slabykh Udarnykh Voln s Uprugimi Konstruktsiyami. Nauchnye Trudy (USSR) n2 p1-160 1970, by John A. Miller.

Descriptors: (*Elastic shells, Shock waves), Cylindrical bodies, Spheres, Underwater explosions, Pressure, Equations of motion, Detonation waves, USSR.
Identifiers: Translations, Spherical shells, Cylindrical shells.

The report examines questions of the interaction of plane nonstationary acoustic pressure waves with thin elastic shells immersed in an ideal fluid. Proposed are various approximate approaches for estimating the external hydrodynamic forces. The stressed and strained state of shells of revolution are considered when they are loaded with shock waves. Recommendations on the limits of applicability of the approximate calculation methods are presented.

AD-767 893/1GA PC$16.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
DIFFRACTION OF ELASTIC WAVES IN MULTIPLY CONNECTED BODIES,
A. N. Guz, and V. T. Golovchan. 5 Sep 73, 280p Rept no. FTD-MT-24-418-73
Edited machine trans. of mono. Difraktsiya Uprugikh Voln v Mnogosvyaznykh Telakh, n.p., 1972 p1-256, by Robert D. Hill.

Descriptors: (*Deformation, Equations of motion), (*Mechanical waves, Diffraction), Stresses, Tensor analysis, Elasticity, Potential theory, Partial differential equations, Graphics, USSR.
Identifiers: *Elastic waves, Viscoelasticity, Translations.

Contents:
- Linear problems of wave dynamics of isotropic deformable bodies;
- Representation of the solution of a wave equation in certain coordinate systems;
- Diffraction of waves in bodies limited by circular cylindrical surfaces;
- Wave diffraction in bodies with spherical cavities;
- Solution to problems of the diffraction of elastic waves on cylindrical surfaces;
- Wave diffraction in semi-bounded bodies with cavities;
- Principles of the theory of wave propagation in fibrous and granular media.

AD-768 035/8GA PC$3.50/MF$1.45
Massachusetts Inst of Tech Cambridge Dept of Ocean Engineering
DYNAMIC PLASTIC BUCKLING OF COMPLETE SPHERICAL SHELLS,
Norman Jones, and Chung S. Ahn. Aug 73, 62p Rept no. 73-19
Contract N00014-67-A-0204-0032

Descriptors: (*Structural shells, Buckling(Mechanics)), Spheres, Loading(Mechanics), Kinetic energy, Elasticity, Plasticity, Stresses, Numerical analysis.
Identifiers: *Spherical shells, Dynamic structural analysis.

A theoretical investigation is undertaken into the dynamic instability of complete spherical shells which are loaded impulsively. The linear elastic, elastic-plastic and rigid-plastic material idealizations are used in the various theoretical procedures. The threshold velocities for the elastic and rigid-plastic models are larger than those for cylindrical shells having the same R/h ratios and material parameters, while the critical mode numbers are similar. (Author)

AD-768 087/9GA PC$4.75/MF$1.45
Watervliet Arsenal N Y
A RELATIVE OPTIMIZATION OF CANTILEVER EULER BEAMS WITH EXAMPLE FOR HAUGER'S PROBLEM.
Technical rept.,
Charles R. Thomas. Aug 73, 51p Rept no. R-WV-T-6-26-73

Descriptors: (*Cantilever beams, Optimization), Mathematical models, Equations of motion, Approximation(Mathematics), Partial differential equations, Flutter, Loading(Mechanics), Boundary value problems.
Identifiers: Ritz method.

A relative optimization of a generalized non-dimensional form of the cantilevered Euler beam is accomplished by the application of an adjoint variational principle in conjunction with a generalized Ritz procedure. Considerable weight reductions are shown to be possible within the bounds of imposed constraints for a two term Ritz approximation of Hauger's problem. (Author)

AD-768 089/5GA PC$6.25/MF$1.45
Watervliet Arsenal N Y
EFFECTIVE STIFFNESS FLEXURAL VIBRATIONS OF SIMPLY SUPPORTED RECTANGULAR PLATES WITH VELOCITY CORRECTION.
Technical rept.,
Charles R. Thomas. Jul 73, 65p Rept no. R-WV-T-X-24-73

Descriptors: (*Laminates, *Vibration), Elasticity, Boundary value problems, Equations of motion.
Identifiers: *Plates(Structural members).

The previously developed velocity corrected effective stiffness of microstructure plate theory is used to study the flexural vibrations of simply supported rectangular plates and comparisons are made to an effective modulus plate theory. In each case frequency equations for simply supported edges are developed by passing solutions harmonic in both length and width through the differential equations while automatically satisfying the conditions for simple supports. Careful consideration is given to the variations of dimension-

less frequency with such dimensionless parameters as width-to-thickness ratio, number of layer pairs, density ratio, thickness ratio, width-to-length ratio, and elastic ratio and such results are discussed graphically. (Author)

AD-768 090/3GA PC$3.00/MF$1.45
Watervliet Arsenal N Y
EXTENSIONAL VIBRATIONS OF SIMPLY SUPPORTED LAMINATED RECTANGULAR PLATES.
Technical rept.,
Charles R. Thomas. Aug 73, 42p Rept no. R-WV-T-X-28-73

Descriptors: (*Laminates, *Vibration), Rectangular bodies, Microstructure, Modulus of elasticity, Equations of motion, Numerical analysis.
Identifiers: *Laminated plates, *Plates(Structural members).

The extensional vibrations of simply supported rectangular plates are considered from the viewpoint of the recently derived 'effective stiffness' velocity corrected Sun plate theory by passing solutions harmonic in both plate width and length through the differential equations of motion and boundary conditions such that the boundary conditions for simple supports are automatically satisfied. The results are compared to extensional frequencies for a reduced 'effective modulus' velocity corrected Sun Plate theory. It is concluded that for extensional vibrations a higher order approximation in going to the plate theory is necessary to bring out the effects of microstructure which are present in the continuum theory. (Author)

AD-768 208/1GA PC$2.75/MF$1.45
Lehigh Univ Bethlehem Pa Center for the Application of Mathematics
NON-LINEAR WAVE PROPAGATION.
Final rept.,
R. S. Rivlin. Sep 73, 17p BRL-CR-120
Contract DAAD05-69-C-0053

Descriptors: (*Wave transmission, Nonlinear systems), Shock waves, Mechanical waves, Electromagnetic waves, Propagation, Elasticity, Fluid mechanics.
Identifiers: Themis project.

The report is a summary of the work accomplished under THEMIS project no. 65, 'Non-Linear Wave Propagation.' In addition it lists all technical reports, and the corresponding papers published in the course of the project. (Author)

AD-768 306/3GA Not available NTIS
Shock and Vibration Information Center (Defense) Washington D C
THE SHOCK AND VIBRATION DIGEST. VOLUME 5, NUMBER 10, OCTOBER 1973.
Oct 73, 70p
See also Volume 5, Number 9, AD-767 567.
Availability: Paper copy available from the Shock and Vibration Information Center, Code 8020 Naval Research Lab., Washington, D. C. 20375. Annual subscription $25.00.

Descriptors: (*Vibration, *Reports), (*Shock(Mechanics), Reports), Turbine blades, Resonant frequency, Design, Structural parts, Mathematical models, Damping, Abstracts.
Identifiers: Finite element analysis, Computerized simulation, Computer aided design.

The report contains articles and abstracts relative to shock and vibration phenomena in the following categories: analysis and design, environments, phenomenology, experimentation, components, and systems.

CONF-730808-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
APPLICATION OF THE J-INTEGRAL TO OBTAIN SOME SIMILARITY RELATIONS.
S. J. Chang, and F. J. Witt. 1972, 16p

Descriptors: (*Fractures, *Elasticity), Geometry, Integral equations, Plasticity, Stresses.

For abstract, see NSA 28 06, number 15132.

KAPL-P-3955/GA PC$3.75/MF$1.45
Knolls Atomic Power Lab., Schenectady, N. Y. Pennsylvania Univ., Philadelphia. Towne School of Civil and Mechanical Engineering.
EFFECTS OF COUPLED THERMOPLASTICITY WITH APPLICATIONS TO A HOLLOW SPHERE.
H. A. Nied, and S. C. Batterman. 1971, 34p
CONF-730810-1

Descriptors: (*Solids, *Plasticity), Differential equations, Elasticity, Isotropy, Spheres, Spherical configuration, Stresses, Thermodynamic properties, Thermodynamics.

For abstract, see NSA 28 06, number 15141.

LA-5225-MS/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ONE-DEGREE-OF-FREEDOM MODEL FOR THE TAYLOR INSTABILITY OF AN IDEALLY PLASTIC METAL PLATE.
G. N. White. Apr 73, 8p
Contract W-7405-eng-36

Descriptors: (*Plates, *Plasticity), Elasticity, Metals, Numerical solution.

For abstract, see NSA 28 04, number 10583.

N73-29725/1GA PC$6.50/MF$1.45
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
THEORETICAL PRESSURE DISTRIBUTION, APPARENT MASS, AND MOMENT OF INERTIA OF A DISK PENDULUM OSCILLATING AT LOW FREQUENCY.
M.S. Thesis - George Washington Univ., Washington, D. C.
R. S. Dunning. Apr 73, 86p NASA-TM-X-69569

Descriptors: *Acoustics, *Pendulums, *Pressure distribution, *Torque, Disks (Shapes), Inertia, Mathematical models, Oscillations.

For abstract, see STAR 1120

N73-29937/2GA PC$3.25/MF$1.45
Lehigh Univ., Bethlehem, Pa. Inst. of Fracture and Solid Mechanics.
A HALF PLANE AND A STRIP WITH AN ARBITRARILY LOCATED CRACK.
F. Erdogan, and K. Arin. Apr 73, 22p NASA-CR-132289, NASA-TR-73-8
Contracts NGR-39-007-011, NSF GK-11977

Descriptors: *Boundary value problems, *Cracks, *Elastic media, *Stresses, Green function, Integral equations, Numerical analysis.

For abstract, see STAR 1120

N73-29940/6GA PC$3.50/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
EXPERIMENTAL STRESS ANALYSIS OF LARGE PLASTIC DEFORMATIONS IN A HOLLOW SPHERE DEFORMED BY IMPACT AGAINST A CONCRETE BLOCK.
R. E. Morris. Jul 73, 29p NASA-TM-X-68270, E-7577

Descriptors: *Impact tests, *Plastic deformation, *Spheres, *Stress analysis, Concretes, Radioactive materials, Structural failure.

For abstract, see STAR 1120

N73-29941/4GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
SOME EFFECTS OF EXPERIMENTAL ERROR IN FRACTURE TESTING.
T. W. Orange. 1973, 18p NASA-TM-X-68285, E-7621
Conf-Presented at 7TH Natl. Symp. On Fracture Mech., College Park, MD., 27-29 Aug. 1973; Sponsored by AM. Soc. For Testing and Mater.

Descriptors: *Errors, *Fracture mechanics, *Stress concentration, Crack propagation, Fracture strength, Mathematical models.

For abstract, see STAR 1120

N73-29943/0GA PC$5.00/MF$1.45
Defence Standards Labs., Maribyrnong (Australia).
THE FRACTURE OF SMALL INTERNALLY DETONATED CYLINDRICAL BODIES PARTLY PREFRAGMENTED BY NOTCHING. PART 1: EXTERNAL NOTCHING.
I. R. Lamborn. Apr 73, 56p REPT-545-PT-1

Descriptors: *Cylindrical bodies, *Detonation, *Explosives, *Fracture mechanics, *Fractures (Materials), Deformation, Fragmentation, Materials tests, Stress analysis.

For abstract, see STAR 1120

N73-29947/1GA PC$5.25/MF$1.45
Stuttgart Univ. (West Germany). Inst. fuer Statik und Dynamik der Luft- und Raumfahrtkonstruktionen.
NATURAL GEOMETRY OF SURFACES WITH SPECIFIC REFERENCE TO THE MATRIX DISPLACEMENT ANALYSIS OF SHELLS.
J. H. Argyris, M. Haase, and G. A. Malejannakis. 1973, 63p ISD-134

Descriptors: *Matrix methods, *Shell theory, *Surface geometry, Curvature, Displacement, Finite element method.

For abstract, see STAR 1120

SLA-73-467/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
RESPONSE OF AN ELASTIC RING TO AN EXPLOSIVELY INDUCED IMPULSIVE LOAD.
D. E. Mitchell. Jun 73, 28p

Descriptors: (*Rings, *Strains), (*Shells, Strains), Explosions, Impact shock, Rods, Simulation.

For abstract, see NSA 28 06, number 12817.

20L. Solid-State Physics

AD-767 677/8GA PC$6.75/MF$1.45
Naval Postgraduate School Monterey Calif
THE REFRACTIVE INDEX OF PB(1-X)SN(X)TE, PB(1-Y)SN(Y)SE, AND PBS(1-X)SE(X) AND THEORETICAL CALCULATIONS FOR PB(1-X)SN(X)TE AND PB(1-Y)SN(Y)SE 10.6 MICRON HETEROSTRUCTURE INJECTION LASERS.
Master's thesis,
Walter George Opyd. Jun 73, 92p

Descriptors: (*Semiconductors, Refractive index), (*Lasers, Photodiodes), (*Irasers, Design), Lead compounds, Tin compounds, Tellurides, Selenides, Sulfides, Semiconducting films, Electrooptics, Theses.
Identifiers: *Lead tellurides, *Tin tellurides, *Lead selenides, *Tin selenides, *Lead sulfides, *Injection lasers, *Light emitting diodes, *Laser materials, Thin films, Heterojunctions.

The refractive indices, n, in the fundamental absorption edge regions of three alloy semiconductors, Pb(1,x)Sn(x)Te, Pb(1-y)Sn(y)Se, and PbS(1-x)Se(x), are investigated. Preliminary results of the refractive indices of PbS(1-x)Se(x) thin films are presented. For Pb(1-x)Sn(x)Te and Pb(1-y)Sn(y)Se, empirical relationships for n have been determined as a function of wavelength, composition, and temperature, using refractive index data previously measured in this laboratory. In the second part of this work, the laser performances of double heterojunction Pb(1-x)Sn(x)Te and Pb(1-y)Sn(y)Se injection lasers emitting 10.6 micrometer radiation and operated at 85K, were theoretically calculated. Threshold current and lasing output power as functions of compositions and laser geometry, were calculated as a guide for optimum design. Threshold current densities of less than 200A/sq cm and output power of more than 2mW with 1A bias current were calculated for diodes of 1sq mm cross section, operated at 85K. (Author)

AD-767 732/1GA PC$3.75/MF$1.45
New Mexico Univ Albuquerque Bureau of Engineering Research
ENERGY STATES IN RANDOM MEDIA.
Technical rept.,
Peter C. C. Chang, and W. J. Byatt. Aug 73, 84p
Rept no. EE-210(73)ONR-005
Contract N00014-68-A-0158

Descriptors: (*Band theory of solids, Crystals), Wave functions, Green's function, Potential energy, Statistical distributions, Computer programs, Nonlinear differential equations.
Identifiers: Density of states, Eigenvalues, Schroedinger equation.

The report is concerned with energy levels and the density of states in random crystal. By developing a non-linear differential equation for the phase process in random crystals, it is shown how to calculate the density of states in one-dimensional random arrays. The method used has the virtues of simplicity and, where comparison with previous numerical results can be made, accuracy, with minimal computing time. Various analytical results are found with the phase process method and these are equivalent with results found by other workers. In the three-dimensional case, it is shown how to use the phase process to help construct the Green's function and, from it, the density of states. No applications are given. By expanding in plane waves, a secular determinant is found for the determination of the energy eigenvalues in a random crystal. (Modified author abstract)

AD-767 737/0GA Reprint
Wayne State Univ Detroit Mich Dept of Physics
THEORY OF ELECTROMAGNETIC GENERATION OF SOUND IN SEMIMETALS,
K. C. Lee, A. M. De Graaf, D. Hsu, and R. L. Thomas. 15 Sep 72, 8p AFOSR-TR-73-1665
Grant AF-AFOSR-1965-71
Availability: Pub. in Physical Review B, v8 n2 p460-466, 15 Jul 73.

Descriptors: (*Metalloids, Electromagnetic properties), (*Bismuth, Ultrasonic radiation), Magnetic fields, Theory.

A simple theory of the electromagnetic generation of shear sound waves in compensated semimetals has been developed, which is valid for low applied magnetic fields. A detailed comparison is made with the recent experimental results of Hsu and Thomas for bismuth. This theory is an extension to the theory of direct generation of sound in metals outlined by Quinn. This theory envisions the collision-drag force exerted by the charge carriers on the elastic background as the primary cause of the direct sound generation. The free-electron-hole model of a semimetal has been used, with the assumption of an isotropic elastic background. It has been possible to obtain the temperature dependence of the relaxation times by comparing the theory with the experimental results. The calculated temperature dependence as well as the magnitude of the relaxation times compare favorably with independent measurements of these quantities. (Modified author abstract)

AD-767 747/9GA Reprint
Washington Univ Seattle Dept of Physics
SHIELDING AND DENSITY OF STATES IN ALLOYS,
Edward A. Stern. 6 May 71, 7p AFOSR-TR-73-1658
Grant AF-AFOSR-1967-71
Prepared in cooperation with Technion - Israel Inst. of Technology (Haifa).
Availability: Pub. in Physical Review B, v7 n12 p5054-5058, 15 Jun 73.

Descriptors: (*Band theory of solids, Alloys), Electrons, Potential energy.
Identifiers: Density of states.

A relationship between the shielding of the ion-core potentials and the electron density of states rho(E,c) in disordered alloys of concentration c is shown. When one type of atom in a binary disordered alloy is replaced by another type of atom, there will be, in general, a rearrangement of the shielding charge around this site. The change in the total shielding charge contributed by electron states of energy E is proportional to the change in rho(E,c) with concentration. A general expression is derived for the change in coherent potential with composition. This change is related to the additional scattering introduced when one type of atom is replaced by another. Based on these relations a discussion is given of the size of clusters necessary to calculate rho(E,c). (Modified author abstract)

AD-767 749/5GA Reprint
Washington Univ Seattle Dept of Physics
POLAR-REFLECTION FARADAY EFFECT AND THE FERMI SURFACE OF ALPHA-PHASE SILVER-MAGNESIUM AND SILVER-CADMIUM ALLOYS,
J. M. Tracy, and E. A. Stern. 13 Nov 72, 13p
AFOSR-TR-73-1656
Grant AF-AFOSR-1967-71
Availability: Pub. in Physical Review B, v8 n2 p582-592, 15 Jul 73.

Descriptors: (*Silver alloys, *Band theory of solids), Magnesium alloys, Cadmium alloys, Phase studies, Magneto-optic effect.
Identifiers: *Fermi surfaces, Density of states, Faraday effect.

The Fermi surfaces of alpha-phase disordered AgCd and AgMg alloys have been studied using the polar-reflection Faraday effect. Concentrations as high as 39.3-at % Cd and 30.0-at % Mg were obtained. It is shown that the uncertainty in the energy of states on the Fermi surface is small compared to changes which occur on alloying. Thus in both alloy systems the Fermi surface is still a valid concept to use in discussing electronic properties of the concentrated alloys. It is found that the Fermi surfaces of both AgMg and AgCd change the same with concentration within experimental error up to 30 at %, the maximum solubility of Mg in the alpha-phase. The Fermi-surface necks continually increase in size faster than the belly dimensions with increasing Cd and Mg content. There is some evidence that the AgCd Fermi surface may have a second contact near 40-at %Cd. (Modified author abstract)

AD-767 751/1GA Reprint
Northwestern Univ Evanston Ill Dept of Physics
NMR-IN CERIUM-TIN-INDIUM ALLOYS.
L. B. Welsh, and J. B. Darby, Jr. 1973, 8p AFOSR-TR-73-1793
Grant AF-AFOSR-2012-71
Prepared in cooperation with Argonne National Lab., Ill.
Availability: Pub. in American Institute of Physics, n10 p1325-1329 1973.

Descriptors: (*Nuclear magnetic resonance, Magnetic alloys), Cerium alloys, Indium alloys, Tin alloys, Intermetallic compounds, Magnetic properties, Frequency shift, Cryogenics.
Identifiers: Magnetic susceptibility, Spin Lattice relaxation.

A study of the Sn(119) NMR Knight shifts and spin-lattice relaxation time was made in the CeSn(x) in (3-x) alloy system for 0.6 < or = x < or = 3.0 to determine the variation of the magnetic behavior of Ce f-electron with x. For CeSn3, the Sn NMR properties are qualitatively similar to those of LaSn3 which is consistent with the Ce f-electron occupying a virtual bound state. The NMR properties of the alloys are consistent with a sharp increase in the f-electron susceptibility with decreasing x down to x- 1.8 and suggest that a local moment picture for Ce-f-electron may be roughly correct for 0.6 < or = 1.8. (Author)

AD-767 752/9GA PC$2.75/MF$1.45
New South Wales Univ Kensington (Australia)
ELECTRON PARAMAGNETIC RESONANCE STUDY OF GAAS SURFACES.
Annual rept. no. 6, 1 Feb 72-31 Jan 73,
D. Haneman. Apr 73, 17p ARDG(FE)-440-6
Grant DA-CRD-AFE-s92-544-71-g168
See also report dated Apr 72, AD-745 220.

Descriptors: (*Gallium arsenides, *Paramagnetic resonance), (*Semiconductors, Surface properties), Single crystals, Experimental design, Silicon, Cryogenics, Australia.
Identifiers: *Electron paramagnetic resonance.

The clean surfaces of GaAs single crystals are of considerable technological importance. When properly covered with cesium and oxygen, they display negative electron affinity, making them efficient photoemitters in the infrared. The general nature of the effect is understood in terms of general parameters such as work function, but not the details at the atomic level. These await a knowledge of the structure and electron properties of clean GaAs (110) surfaces. The present work is aimed at obtaining such an understanding, using electron paramagnetic resonance (EPR) techniques. The task of obtaining large single crystal cleavage surfaces in ultra high vacuum in the central portion of a microwave cavity, cooling them to low temperatures and obtaining sufficient signal to noise ratio from the relatively small surface area is an exacting one. The work of the last year, has been mainly devoted to developing the experimental techniques necessary to achieve this. (Modified author abstract)

AD-767 756/0GA Reprint
Northwestern Univ Evanston Ill Dept of Physics
RELATIVISTIC ENERGY BAND STRUCTURE AND PROPERTIES OF GAMMA URANIUM,
D. D. Koelling, and A. J. Freeman. 7 Nov 72, 11p
AFOSR-TR-73-1886
Grant AF-AFOSR-2012-71
Availability: Pub. in Physical Review B, v7 n10 p4454-4463, 15 May 73.

Descriptors: (*Uranium, *Band theory of solids), Metallic crystals, Atomic energy levels.
Identifiers: Augmented plane wave method, Fermi surfaces, Density of states, Body centered cubic lattices, Muffin tin potentials.

The electronic band structure of the high temperature phase of uranium has been determined by means of the symmetized relativistic augmented plane wave method. Six different crystal potentials (three atomic starting configurations, 5f(4) 7s(2), 5f(3) 6d(1) 7s(2), and 5f(2) 6d(2) 7s(2), each taken together with alpha = 2/3 and alpha = 1 approximations for exchange) were employed in the warped muffin tin approximation. The relativistic effects are found to be very important and result in 5f bands which overlap and hybridize strongly with the very broad '7s-p' and broad 6d bands (which in the absence of the 5f states are found to be those typical of a high atomic number transition

metal). The non-relativistic energy bands are found to be incorrect in many ways. A calculated density of states shows considerable structure reflecting the s-d-f hybridization and a relatively high density of states (1.45 states per atom eV) at the Fermi energy. The Fermi surface is found to be complicated and to consist of two hole and one electron surfaces. (Author)

AD-767 771/9GA Reprint
Colorado State Univ Fort Collins Dept of Physics
ELASTIC PROPERTIES OF TANTALUM OVER THE TEMPERATURE RANGE 4-300K,
R. G. Leisure, D. K. Hsu, and B. A. Seiber. 14 Mar 73, 5p AFOSR-TR-73-1675
Grant AF-AFOSR-2042-71
Availability: Pub. in Jnl. of Applied Physics, v44 n8 p3394-3397 Aug 73.

Descriptors: (*Tantalum, Elasticity), Nuclear resonance, Thermal analysis.
Identifiers: Elastic properties, Nuclear acoustic resonance.

The elastic properties of tantalum have been investigated over the temperature range 4.2-300K. The values of the adiabatic elastic constants C(11), C(44), and C(L) = (1/2)(C(11)+C(12)+2C(44)) at 4.2K in units of 10 to the 12th power dyne/sq. cm are, respectively, 2.70, 0.873, and 3.02. The Debye temperature was calculated from the elastic constants and found to have the value of 265K at low temperature. The elastic constants become temperature independent at low temperatures and approach linear behavior at high temperatures. In contrast to the normal behavior of the elastic constants, nuclear acoustic resonance experiments show anomalous line broadening. (Author)

AD-767 881/4GA Reprint
Westinghouse Research Labs Pittsburgh Pa
EFFICIENT LUMINESCENCE CENTERS IN H- AND D-IMPLANTED 6H SILICON CARBIDE,
Lyle Patrick, and W. J. Choyke. 26 Feb 73, 12p
AFOSR-TR-73-1769
Contract F44620-70-C-0111
Availability: Pub. in the Jnl. of Physical Review B, v8 n4 p1660-1669 Aug 73.

Descriptors: (*Silicon carbides, Crystal lattice defects), (*Luminescence, Silicon carbides), Hydrogen, Deuterium, Doping, Annealing, Phonons, Polarization, Cryogenics.
Identifiers: Hydrogen atoms, Phonon spectra.

The luminescence center formed in SiC by H implantation and annealing is an H atom bonded to a C atom at a Si vacancy. It has high radiative efficiency at low temperatures because of the absence of Auger recombination. This model is derived from an annealing study and by an analysis of the three components of the phonon spectrum, (1) a 370-meV CH bond-stretching mode, (2) two Si-vacancy localized modes, and (3) many momentum-conserving modes. The change of frequency of these components on substituting D for H is discussed. Spectra and polarization are analyzed. The H and D spectra are contrasted with the spectrum of the donor N. At 1.3K very nearly all the luminescence is due to the nonaxial centers. Thermally excited states were observed at various temperatures up to 26K. (Modified author abstract)

AD-767 830/3GA Reprint
Texas Univ Austin Electronics Research Center
ELECTRON TRANSPORT PROPERTIES IN MAGNETIC MATERIALS,
D. I. Tchernev, and A. Syllaios. 1972, 7p AFOSR-TR-73-1669
Contract F44620-71-C-0091
Library of Congress catalog card no. 72-623469. Also available as rept. no. CONF-721114.
Availability: Pub. in American Institute of Physics Conference Magnetism and Magnetic Materials Denver (18th), n10 pt1 p515-519 1972.

Descriptors: (*Semiconductors, Magnetic materials), Transport properties, Carriers(Semiconductors), Hall effect, Electron spin resonance.
Identifiers: *Magnetic semiconductors, Electron magnon interactions, Electron spin.

The equations of motion for the electron spin and trajectory were solved exactly for the cases of constant velocity or constant acceleration in a nonhomogeneous magnetic field, such as a domain wall or a periodic magnetic structure. It was found that the spin polarization is conserved only for electrons traveling through a magnetization reversal in time shorter than the Larmor precession period. The spin of slow electrons follows the direction of magnetization as they travel through the magnetic structure and therefore there can be no interaction between slow electrons and spin waves. The trajectory of the electron is cycloidal for initial velocities and electric fields less than a critical value. When this value is exceeded the trajectory is modified drastically. When scattering is taken into account, the predictions are that for mean free path between collisions equal or larger than the cyclotron radius, a drastically different Hall angle and Hall mobility will exist when spin waves are present or absent. The possibility for population inversion and maser or laser action exist for magnetic semiconductors with large anisotropy and carrier mobility. (Author)

AD-767 877/4GA PC$6.25/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
CATHODOLUMINESCENCE OF ION IMPLANTED ZNS.
Master's thesis,
Sidney L. Johnson, Jr. Jun 73, 85p Rept no. GEP/PH/73-11

Descriptors: (*Zinc sulfides, Luminescence), Semiconductors, Doping, Sodium, Electron bombardment, Band theory of solids, Atomic energy levels, Electron transitions, Spectra(Visible + ultraviolet), Experimental design, Theses.
Identifiers: Ion implantation, *Cathodoluminescence, Emission spectra.

Sodium ion implanted zinc sulfide crystals were studied by observing the luminescence produced by incident electrons with energies between 4 and 15 keV. Spectral comparisons were made between 100, 200, and 300 keV sodium implanted, sodium doped, and pure melt grown zinc sulfide crystals. The relative increase in the size of the UV band located at approximately 3450A was attributed to the presence of sodium. A possible energy level model is discussed. (Author)

AD-768 053/1GA PC$6.50/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
STUDYING PRESSURE OF SATURATED VAPORS OF SOME SEMICONDUCTORS BY MEANS OF RADIOACTIVE ISOTOPES,
M. G. Shakhtakhtinskii. 12 Sep 73, 89p Rept no. FTD-HT-496-73
Edited trans. of Akademiya Nauk Azerbaidzhanskoi SSR, Baku. Institut Fizika. Trudy, v11 p52-107 1963, by Marilyn Olaechea.

Descriptors: (*Semiconductors, *Vapor pressure), Evaporation, Phase studies, Impurities, Radioactive isotopes, Experimental design, USSR.
Identifiers: Translations.

The object was to study the pressure of saturated vapors in a number of semiconductor compounds and solutions and to clarify certain processes which occur during evaporation. The most exact determination of saturated vapor pressure is obtained by using radioactive isotopes. In order to achieve the goal (test) devices and a work technique are developed.

AD-768 073/9GA PC$3.50/MF$1.45
Intelcom Rad Tech San Diego Calif
IRRADIATION EFFECTS IN PBSNTE.
Annual rept. 1 Aug 72-31 Jul 73,
Joseph F. Colwell, Barry A. Green, Howard W. Harper, Roland E. Leadon, and James A. Naber. 17 Aug 73, 74p Rept no. RT-8040-001
Contract N00014-73-C-0013

Descriptors: (*Semiconductors, Radiation damage), (*Tellurides, Radiation damage), Lead compounds, Tin compounds, Electron Bombardment, Neutron reactions, Hall effect, Electrical conductance, Optical properties, Carriers(Semiconductors), Annealing, Infrared detectors.
Identifiers: *Lead tellurides, *Tin tellurides, Mercury tellurides, Cadmium tellurides, Carrier density.

The electrical properties of Pb(1-x)Sn(x)Te have been measured before and after irradiation and during isochronal annealing after irradiation for samples with a nominal value of x = 0.2 and different initial hole densities. For two samples that were initially degenerate at 78K, the hole density decreased with electron and fission neutron irradiation. For a zinc-diffused sample that was initially nondegenerate at 78K, electron irradiation caused an increase in hole density. The heavily doped samples remained p-type over the full range of temperature measurements, whereas the lower-density sample converted to n-type at higher temperatures. Possible models are proposed to explain these results. Theoretical calculations of lattice mobility have been made and are compared to the measured mobilities. The theoretical amount of radiation energy that goes into displacement damage in PbSnTe has been calculated for electrons of various energies and for a fission neutron spectrum. (Author)

AD-768 212/3GA PC$10.75/MF$1.45
Intelcom Rad Tech San Diego Calif
TRANSIENT RADIATION EFFECTS RESEARCH.
Final rept. 3 Apr 72-30 Jun 73,
Joseph L. Azarewicz, Robert A. Berger, Joseph F. Colwell, Barry A. Green, and Terry M. Flanagan. Jul 73, 174p Rept no. RT-8044-001 HDL-TR-060-2
Contract DAAG39-68-C-0060

Descriptors: (*Semiconductors, *Radiation damage), (*Silicon, Radiation damage), (*Gallium arsenides, Radiation damage), (*Semiconductor devices, Reliability(Electronics)), Electron bombardment, Neutron reactions, Ionization, Defects(Materials), Annealing, Transistors, Capacitors, Dielectrics, Polymers, Electrical properties.
Identifiers: *Transient radiation effects(Electronics), Minority carrier lifetime, Carrier density.

The theory of displacement damage in semiconductors has been used to investigate the effect of neutron energy on damage curves and short-term annealing, to derive a curve of equivalent 1-MeV electron fluence for irradiation by protons, and to calculate the relative displacement damage produced in GaAs by electrons of various energies. The results of optical and electrical studies on GaAs irradiated at room temperature with 1- and 30-MeV electrons, together with postirradiation annealing data, are presented. Electron irradiation of high-purity n- and p-type silicon yielded information on the energy level of the donor and acceptor states of a defect assumed to be the isolated vacancy. The results are presented of investigations to determine the cross sections for capture of holes by negatively charged gold atoms in gold-doped n-type silicon. A study was initiated of the recombination lifetime at low temperature in specially doped silicon used for infrared detector fabrication, and preliminary results are presented. Development of a fast-time-resolution optical absorption apparatus has involved testing of materials for Cerenkov sources. Results of these studies are presented. Charge injection and storage

release in two common capacitor materials, Mylar and Teflon, have been studied. The charge storage is dependent on the nature of this interface and, in some cases, on the bias temperature history. (Author)

AD-768 218/0GA PC$3.00/MF$1.45
California Univ Los Angeles School of Engineering and Applied Science
INTERFACE PHENOMENA IN INTEGRATED CIRCUIT OXIDES.
Final rept. 30 Jun 70-1 Jan 73,
Cadambanguidi R. Viswanathan. Jul 73, 45p Rept no. UCLA-ENG-7359 ECOM-0283-F-70
Contract DAAB07-70C-0283

Descriptors: (*Silicon dioxide, *Ionic current), (*Integrated circuits, Silicon dioxide), Tunneling(Electronics), Interfaces, Semiconducting films, Capacitors, Annealing, Electrical properties.
Identifiers: Metal oxide semiconductors, Ion transport, Metal insulator semiconductors.

Ion transport in Metal-SiO2 Silicon structures were studied. A different migration rate from the silicon to the metal interfaces was found while the reverse migration has yet another rate. An excitation limited mobile ion transport model was proposed. By use of a ramp-voltage technique and C-V measurements after bias-heat stress, it was demonstrated that the number of mobile ions is given by a temperature dependent Boltzman distribution. The ramp-voltage technique is useful in determining total number of ions mobile at a given temperature but is not by itself sufficient to determine the transport properties. It was demonstrated that evaluation of oxide contamination by C-V curve shifts yields a lower than true value if the sample is not kept under positive bias and sweep bias applied only when the sweep voltage approaches closely the flat-band voltage. SiO2 layers were also fabricated by the pyrolitic decomposition of silane gas and the electrical properties as a function of annealing temperatures were studied. Electrical properties of films annealed at 1000C approach closely those of thermal oxides. Recommendations for further oxide studies are given. (Author)

AD-768 268/5GA Reprint
New York Univ N Y Courant Inst of Mathematical Sciences
THERMOELASTIC WAVE PROPAGATION IN A RANDOM MEDIUM AND SOME RELATED PROBLEMS,
P. L. Chow. 22 Oct 72, 21p Rept no. NYU-ONR-H39
Contract N00014-67-A-0467-0006
Revision of report dated 16 Oct 71.
Availability: Pub. in International Jnl. of Engineering Science, v11 p953-971 1973.

Descriptors: (*Mechanical waves, Wave transmission), Thermal stresses, Wave functions, Green's function, Boundary value problems, Matrix algebra, Perturbation theory, Thermal conductivity.
Identifiers: Thermoelasticity, Elastic waves.

The mean waves in a medium with random inhomogeneities are studied within the theory of linear thermoelasticity. Under the assumption of small random fluctuations approximate integro-differential equations governing the mean displacement and temperature field are derived. For the elastic case the material behaves effectively as a viscoelastic body with memory. The dispersion equation is obtained for the thermoelastic case. This equation is analyzed for some special cases. The random effects introduce attenuation and change of phase speeds for the compressional and shear waves. For weak thermoelastic coupling, the shear wave is not affected by the random thermal properties. Explicit results are obtained for general and special cases. In general the mean fields are coupled in a complicated way. Therefore an uncouplied theory is presented. Then the problems with random boundary conditions or a randomly varying boundary are discussed. Different perturbation methods are given. Two examples are provided respectively by the heat conduction across a rough surface and the hydrodynamic theory of lubrication under a random loading. (Author)

AD-768 317/0GA PC$4.75/MF$1.45
Harvard Univ Cambridge Mass Div of Engineering and Applied Physics
THE ANISOTROPY OF THE PENETRATION DEPTH IN SUPERCONDUCTING TIN.
Technical rept.,
Patrick Chung Loung Tai. Sep 73, 171p Rept no. TR-6
Contract N00014-67-A-0298-0022, Grant NSF-GH-33576

Descriptors: (*Tin, Superconductivity), (*Superconductors, Anisotropy), Cryogenics, Magnetometers, Field theory, Magnetic fields, Test equipment, Design.
Identifiers: Superconducting quantum interferenced devices, BCS theory, Meissner effect.

The temperature dependence of the penetration depth in superconducting tin was measured using a dc magnetometer. The high sensitivity of the SQUID magnetometer used allowed this to be done on bulk samples to an accuracy of 1A. Single crystals of tin were used as samples in order to measure the anisotropy with respect to crystallographic orientations. Some theories on the penetration depth are presented. They are found to be inadequate for accurate comparison with the present data, because they are either based on the isotropic model or are not easily applicable to tin. To serve as a guide and hopefully to stimulate interest, the present data is fitted to the BCS theory by varying some parameters. The fit is reasonable but some deviations still remain. (Modified author abstract)

AD-768 335/2GA PC$2.75/MF$1.45
Aerospace Corp El Segundo Calif Lab Operations
A NOVEL PARAMETRIC NEGATIVE RESISTANCE EFFECT IN JOSEPHSON JUNCTIONS.
Rept. for 1 Jan 73-30 Jun 73,
Helmut Kanter. 29 Oct 73, 18p Rept no. TR-0074(9230-02)-3 SAMSO-TR-73-302
Contract F04701-73-C-0074

Descriptors: (*Superconductors, Resistance(Electrical)), Tunneling(Electronics), Parametric amplifiers, Superconductivity, Negative resistance circuits.
Identifiers: *Josephson junctions, *Negative resistance.

The negative resistance effect recently predicted for current controlled highly damped Josephson junctions is experimentally demonstrated at a frequency of 9 GHz. Characteristically, the pump (or Josephson) frequency is smaller than the amplified one and the pump mechanism is effective over a broad range of frequencies in contrast to the conventional parametric negative resistance effect where the pump frequency exceeds that of signal and idler and where the frequency of operation is limited to a narrow range. The braodband feature renders operation uncritical to tuning and bias voltage fluctuations. The fact that the junction is the element of lowest impedance in the circuit alleviates to a degree the matching problem generally encountered with Josephson contacts. (Author)

CEA-CONF-2241/GA PC$3.50/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
AUTOMATIC SYSTEM FOR MEASUREMENT OF (CARRIER) PROFILE AND MOBILITY BY THE HALL EFFECT AND CONDUCTION IN SILICON.
J. F. Proth, and J. Monnier. 16 Oct 72, 27p CONF-720990-4
In French. U.S. Sales Only.

Descriptors: (*Silicon, *Charge carriers), Carrier density, Carrier mobility, Electric conductivity, Hall effect, Measuring methods.

For abstract, see NSA 28 04, number 10551.

CEA-CONF-2242/GA PC$3.50/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
STUDY OF CARRIER THE DISTRIBUTION AND OF THE PHENOMENA OF GENERATION AND RECOMBINATION IN A PLANE JUNCTION.
H. Carme, and J. Monnier. 16 Oct 71, 30p CONF-720990-2
In French. U.S. Sales Only.

Descriptors: (*Semiconductor diodes, *Sensitivity), (*Charge carriers, *Trapping), Carrier mobility, Diffusion length, Photodiodes, Recombination, Semiconductor junctions.

For abstract, see NSA 28 04, number 10552.

CEA-CONF-2246/GA PC$3.00/MF$1.45
Commissariat a l'Energie Atomique, Grenoble (France). Centre d'Etudes Nucleaires.
ION IMPLANTATION USING NUCLEAR REACTIONS.
G. Guernet, A. Bontemps, J. Marine, and E. Ligeon. 10 Nov 72, 13p CONF-720990-6
In French. U.S. Sales Only.

Descriptors: (*Silicon, *Ion implantation), (*Tellurides, Ion implantation), (*Zinc compounds, Ion implantation), Activation analysis, Alpha beams, Alpha particles, Annealing, Backscattering, Boron ions, Boron 11, Channeling, Crystal doping, Doped materials, Kev range 10-100, Kev range 100-1000, Optimization, Proton reactions, Spatial distribution, Surfaces.

For abstract, see NSA 28 06, number 13348.

CEA-R-4401/GA PC$7.75/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.
STUDY OF DISLOCATION CLIMB CREEP OF MAGNESIUM SINGLE CRYSTALS COMPRESSED ALONG THE ANTI C AXIS.
G. Edelin. Jun 73, 113p
In French. U.S. Sales Only.

Descriptors: (*Magnesium, *Creep), Compression, Deformation, Dislocations, Monocrystals.

For abstract, see NSA 28 06, number 15128.

CEA-R-4453/GA PC$9.00/MF$1.45
Commissariat a l'Energie Atomique, Fontenay-aux-Roses (France). Centre d'Etudes Nucleaires.
STUDY OF THE ELECTRONIC AND MAGNETIC PROPERTIES OF SOME ACTINIDE COMPOUNDS BY SPECIFIC HEAT MEASUREMENTS.
J. Danan. Jul 73, 138p
In French. U.S. Sales Only.

Descriptors: (*Thorium nitrides, *Electronic structure), (*Thorium sulfides, Electronic structure), (*Uranium carbides, Electronic structure), Calorimeters, Chemical composition, Low temperature, Magnetic properties, Medium temperature, Quantity ratio, Specific heat, Temperature dependence, Thermodynamic properties, Ultralow temperature, Very low temperature, Plutonium carbides, Uranium sulfides, Uranium nitrides.

For abstract, see NSA 28 06, number 13349.

COM-73-50843/4GA PC-GPO/MF$1.45-NTIS
National Bureau of Standards, Boulder, Colo. Cryogenics Div.
THERMAL CONDUCTIVITY OF SOLIDS AT ROOM TEMPERATURE AND BELOW. A REVIEW AND COMPILATION OF THE LITERATURE.
Final rept.,
Gregg E. Childs, Lewis J. Ericks, and Robert L. Powell. Sep 73, 624p NBS-MN-131
Supersedes NBS-Circ-556, PB-172 004.
Paper copy available from GPO $7.80 as C13.44:131.

Descriptors: (*Thermal conductivity, Tables(Data)), (*Reviews, Thermal conductivity), (*Cryogenics, Thermal conductivity), Elements, Metals, Alloys, Minerals, Crystals, Solidified gases, Polymers, Semiconductors(Materials), Glass, Dielectrics.

An extensive compilation is given of the measured values of thermal conductivity for nearly all solid materials from room temperature down to 0.01 Kelvin. The reviewed materials include elements, alloys and commercial metals, semiconductors, semimetals, ionic and valence crystals, minerals, molecular crystals, polymers, glasses, and disordered dielectrics. Excluded are foams, powders, earths, fibers, layers of composites, and similar other heterogeneous solids. Data for temperatures below 1 kelvin are presented separately. The tables and graphs are complete for literature references from 1900 to mid-1971. Experimental methods and physical phenomena are discussed in the text and coded in the tables for references for which curves are shown.

CONF-730703-1/GA PC$3.00/MF$1.45
Oak Ridge National Lab., Tenn.
RADIATION INDUCED COMPENSATION AND DEFECT INTERACTIONS IN GERMANIUM.
J. W. Cleland. 1972, 4p

Descriptors: (*Germanium, *Physical radiation effects), Antimony, Arsenic, Carrier density, Carrier mobility, Crystal defects, Doped materials, Gamma radiation, Impurities, N-type conductors, Neutron beams, Photon beams, Thermal neutrons.

For abstract, see NSA 28 06, number 13350.

COO-2027-6/GA PC$5.45/MF$1.45
Case-Western Reserve Univ., Cleveland, Ohio. Dept. Of Physics.
MOTION OF IONS IN SOLID HELIUM. PROGRESS REPORT FOR THE PERIOD MAY 1, 1971--JANUARY 31, 1973.
1973, 55p
Contract AT(11-1)-2027

Descriptors: (*Helium, *Ion drift), (*Positronium, *Lifetime), Carrier mobility, Droplets, Electric charges, Electron spin resonance, Liquids, Lyman lines, Relaxation, Solids, Tunnel effect, Ultralow temperature, Vacancies.

For abstract, see NSA 28 05, number 12543.

COO-294-25/GA PC$3.25/MF$1.45
Chicago Univ., Ill.
PARAMAGNETIC RESONANCE ABSORPTION. FINAL REPORT.
C. A. Jr. Hutchison. 4 May 73, 21p
Contract AT(11-1)-294

Descriptors: (*Rare earths, *Electronic structure), (*Actinides, Electronic structure), (*Organic compounds, Electronic structure), Bibliographies, Cations, Crystals, Electron spin resonance, Endor, Molecules, Triplets.

For abstract, see NSA 28 05, number 11122.

COO-3116-5/GA PC$6.25/MF$1.45
Boston Univ., Mass.
COINCIDENCE MOESSBAUER STUDIES OF SOLID STATE PHENOMENA. FINAL REPORT, JUNE 1, 1968--JULY 31, 1972.
G. R. Hoy. 82p
Contract AT(11-1)-3116

Descriptors: (*Moessbauer effect, *Solids), Coincidence methods, Excitation, Hyperfine structure, Interactions, Quadrupoles, Spectroscopy.

For abstract, see NSA 28 04, number 10558.

COO-3151-20/GA PC$3.25/MF$1.45
Cornell Univ., Ithaca, N. Y. Lab. Of Atomic and Solid State Physics.
EXPERIMENTAL PHONON PHYSICS PROGRESS REPORT, APRIL 1, 1972--MARCH 31, 1973.
R. O. Pohl, and A. J. Sievers. 25p
Contract AT(11-1)-3151

Descriptors: (*Glass, *Specific heat), (*Helium, Specific heat), (*Sodium fluorides, *Phonons), (*Potassium chlorides, *Infrared spectra), Crystals, Magnons, Solids, Doped materials, Lithium compounds, Potassium bromides, Pressure dependence, Strains, Hydroxides, Quasi particles, Resonance scattering, Solitons, Far infrared radiation, Transmission.

For abstract, see NSA 28 05, number 12545.

COO-3158-16/GA PC$3.75/MF$1.45
Cornell Univ., Ithaca, N. Y. Dept. Of Materials Science and Engineering. Thomas J. Watson Research Center, Yorktown Heights, N. Y.
LATTICE STATICS OF INTERSTITIALS IN TUNGSTEN. REPORT NO. 2013.
R. Benedek, and P. S. Ho. 1973, 32p
Contract AT(11-1)-3158

Descriptors: (*Tungsten, *Interstitials), Crystal lattices, Equations, Formation heat, Green function, Interatomic forces, Volume.

For abstract, see NSA 28 06, number 13232.

COO-3158-17/GA PC$4.00/MF$1.45
Cornell Univ., Ithaca, N. Y. Dept. Of Materials Science and Engineering.
DEFECTS IN METAL CRYSTALS. ANNUAL PROGRESS REPORT, MAY 1, 1972--APRIL 30, 1973.
R. W. Balluffi, and D. N. Seidman. Jan 73, 39p
Contract AT(11-1)-3158

Descriptors: (*Ion microscopy, *Efficiency), (*Platinum, *Physical radiation effects), (*Tungsten, Physical radiation effects), (*Gold, Physical radiation effects), Crystal defects, Field emission, Electron beams, Ion beams, Platinum ions, Tungsten ions, Argon ions, Gold ions.

For abstract, see NSA 28 04, number 08662.

COO-3161-10/GA PC$5.45/MF$1.45
Cornell Univ., Ithaca, N. Y. Lab. Of Atomic and Solid State Physics.
STATIC AND DYNAMIC PROPERTIES OF SYSTEMS WITH MULTIPOLE INTERACTIONS AND INTERNAL DYNAMIC STRUCTURE.
M. J. Mandell. Feb 73, 133p
Contract AT(11-1)-3161

Descriptors: Dipoles, Hydrogen, Interactions, Many-body problem, Molecules, Multipoles, Quadrupoles, Quantum mechanics, Solids.

For abstract, see NSA 28 04, number 10559.

COO-3429-10/GA PC$3.00/MF$1.45
Pittsburgh Univ., PA. Dept. Of Chemistry. Los Alamos Scientific Lab., N. Mex.
MAGNETIC PROPERTIES OF LN SUB 3 IN INTERMETALLIC COMPOUNDS.
R. D. Hutchens, W. E. Wallace, and N. Nereson. 1973, 12p

Descriptors: (*Indium alloys, *Magnetic properties), (*Praseodymium base alloys, Magnetic properties), (*Neodymium base alloys, Magnetic properties), (*Gadolinium base alloys, Magnetic properties), Curie point, Curie-weiss law, Ferromagnetism, Intermetallic compounds, Magnetic moments, Dysprosium base alloys, Erbium base alloys.

For abstract, see NSA 28 06, number 13233.

COO-3429-11/GA PC$3.00/MF$1.45
Pittsburgh Univ., PA. Dept. Of Chemistry.
MAGNETIC CHARACTERISTICS OF LNCO SUB 5 --THCO SUB 5 PSEUDO-BINARY SYSTEMS.
W. E. Wallace, and J. T. Swearingen. 1973, 7p

Descriptors: (*Thorium alloys, *Magnetic properties), (*Cobalt base alloys, Magnetic properties), (*Gadolinium alloys, Magnetic properties), (*Holmium alloys, Magnetic properties), Antiferromagnetism, Cobalt, Curie point, Ferromagnetism, Magnetic moments, Erbium alloys.

For abstract, see NSA 28 06, number 13234.

COO-3429-12/GA PC$3.00/MF$1.45
Pittsburgh Univ., PA. Dept. Of Chemistry.
LOW TEMPERATURE HEAT CAPACITIES AND RELATED THERMAL PROPERTIES OF TBAL SUB 2 AND HOAL SUB 2 .
T. W. Hill, W. E. Wallace, R. S. Craig, and T. Inoue. 1973, 16p

Descriptors: (*Aluminium alloys, *Thermodynamic properties), (*Terbium alloys, Thermodynamic properties), (*Holmium alloys, Thermodynamic properties), Entropy, Intermetallic compounds, Low temperature, Magnetism, Medium temperature, Specific heat, Temperature dependence, Ultralow temperature, Very low temperature.

For abstract, see NSA 28 06, number 13235.

COO-3429-13/GA PC$3.00/MF$1.45
Pittsburgh Univ., PA. Dept. Of Chemistry.
SPECIFIC HEAT OF CECO SUB 2 AT TEMPERATURES BETWEEN 1.5 AND 300 EXP 0 K.
S. Nasu, C. A. Bechman, R. S. Craig, N. Marzwell, and W. E. Wallace. 1973, 18p

Descriptors: (*Cerium alloys, *Specific heat), (*Cobalt alloys, Specific heat), Electrons, Interactions, Intermetallic compounds, Low temperature, Medium temperature, Phonons, Spin, Temperature dependence, Ultralow temperature, Very low temperature.

For abstract, see NSA 28 06, number 13236.

COO-3429-14/GA PC$3.00/MF$1.45
Pittsburgh Univ., PA. Dept. Of Chemistry.
LOW TEMPERATURE HEAT CAPACITIES OF DYNI SUB 5 , HONI SUB 5 , AND ERNI SUB 5 .
C. A. Bechman, W. E. Wallace, and R. S. Craig. 1973, 6p

Descriptors: (*Nickel base alloys, *Specific heat), (*Dysprosium alloys, Specific heat), (*Holmium alloys, Specific heat), (*Erbium alloys, Specific heat), Curie point, Entropy, Intermetallic compounds, Peaks, Temperature dependence, Ultralow temperature.

For abstract, see NSA 28 06, number 13237.

COO-3429-15/GA PC$3.00/MF$1.45
Pittsburgh Univ., PA. Dept. Of Chemistry.

LOW TEMPERATURE HEAT CAPACITY STUDIES OF DYFE SUB 3 , DYCO SUB 3 , DYNI SUB 3 , AND LANI SUB 3 .
K. S. V. L. Narasimhan, R. A. Butera, R. S. Craig, and W. E. Wallace. 1973, 17p

Descriptors: (*Dysprosium alloys, *Electronic specific heat), (*Iron alloys, Electronic specific heat), (*Cobalt alloys, Electronic specific heat), (*Nickel alloys, Electronic specific heat), Band theory, Electronic structure, Intermetallic compounds, Specific heat, Temperature dependence, Ultralow temperature, Lanthanum alloys.

For abstract, see NSA 28 06, number 13238.

COO-3429-16/GA PC$3.00/MF$1.45
Argonne National Lab., Ill. Pittsburgh Univ., PA. Dept. Of Chemistry.
NEUTRON DIFFRACTION STUDIES OF THNI SUB 2 CO SUB 3 AND THNI SUB 3 CO SUB 2 AT 297 TO 5 EXP 0 K.
M. Atoji, I. Atoji, C. Do-Dinh, and W. E. Wallace. 1973, 19p

Descriptors: (*Thorium alloys, *Crystal structure), (*Nickel alloys, Crystal structure), (*Cobalt alloys, Crystal structure), Atomic models, Curie point, Ferromagnetism, Intermetallic compounds, Low temperature, Magnetic properties, Neutron diffraction, Temperature dependence, Ultralow temperature, Very low temperature.

For abstract, see NSA 28 06, number 13239.

COO-3429-17/GA PC$3.00/MF$1.45
Pittsburgh Univ., PA. Dept. Of Chemistry.
MAGNETIC AND ELECTRICAL CHARACTERISTICS OF TERNARY STYSTEMS INVOLVING RARE EARTHS AND D-TRANSITION METALS.
W. E. Wallace, R. S. Craig, V. U. S. Rao, and R. A. Butera. 1973, 19p CONF-720978-2

Descriptors: (*Rare earth alloys, *Magnetic properties), (*Cobalt alloys, Magnetic properties), (*Nickel alloys, Magnetic properties), (*Aluminium alloys, Magnetic properties), Anisotropy, Bibliographies, Cerium alloys, Chemical composition, Cobalt alloys, Coupling, Crystal field, Electric conductivity, Gadolinium alloys, Intermetallic compounds, Iron alloys, Phase diagrams, Praseodymium alloys, Quantity ratio, Reviews, Spin, Ternary alloy systems, Thorium alloys, Transition elements, Yttrium alloys, Zirconium alloys.

For abstract, see NSA 28 06, number 13240.

COO-3574-95/GA PC$3.25/MF$1.45
Yale Univ., New Haven, Conn.
STUDY OF IDEAL MAGNETIC CRYSTALS. FINAL REPORT, JUNE 1, 1963--MAY 31, 1973.
W. P. Wolf. 1973, 23p
Contract AT(11-1)-3574

Descriptors: (*Magnetic materials, *Research programs), (*Rare earth compounds, Research programs), Crystals, Magnetic properties, Thermodynamic properties.

For abstract, see NSA 28 05, number 11339.

FRNC-TH-320/GA PC$8.75/MF$1.45
Lyon Univ. (France).
STUDY OF PARAMAGNETIC DEFECTS FORMED BY IRRADIATING A Y-TYPE ZEOLITE WITH GAMMA RADIATION.
A. Abou Kais. 1972, 132p
In French. U.S. Sales Only.

Descriptors: (*Zeolites, *Physical radiation effects), Ammonia, Atoms, Calcination, Carbon oxides, Electron spin resonance, F centers, Gamma radiation, Holes, Hydrogen, Low temperature, Photon beams, Spectra, Temperature dependence, Trapping, Traps, V centers.

For abstract, see NSA 28 04, number 08784.

IFA-LR-1-1972/GA PC$3.00/MF$1.45
Institutul de Fizica Atomica, Bucharest (Romania).
TEMPERATURE DISTRIBUTIONS IN SOLIDS BY LASER IRRADIATION.
R. Alexandrescu, and V. G. Velculescu. 1972, 13p
U.S. Sales Only.

Descriptors: (*Granites, *Physical radiation effects), (*Glass, Physical radiation effects), (*Bricks, Physical radiation effects), (*Wood, Physical radiation effects), Aluminium, Copper, Distribution, Equilibrium, Gold, Heating, Iron, Laser radiation, Lead, Silver, Solids, Welding.

For abstract, see NSA 28 04, number 10567.

INT-26(Pt.1)/GA PC$3.25/MF$1.45
Institute of Nuclear Research, Krakow (Poland).
DESCRIPTION OF SYMMETRY OF MAGNETIC STRUCTURES BY REPRESENTATION OF SPACE GROUPS. PART I.
W. Sikora. 1972, 22p
U.S. Sales Only.

Descriptors: (*Chromium oxides, *Crystal structure), (*Tellurium oxides, Crystal structure), (*Magnetic materials, Crystal structure), Magnetic properties, Space groups, Symmetry, Tetragonal lattices.

For abstract, see NSA 28 04, number 10568.

IPP-4/104/GA PC$5.25/MF$1.45
Max-Planck-Institut fuer Plasmaphysik, Garching (West Germany).
INFLUENCE OF RADIATION DAMAGE ON THE PROPERTIES OF A SUPERCONDUCTOR.
M. Soell. Oct 72, 65p
In German. U.S. Sales Only.

Descriptors: (*Type-ii superconductors, *Radiation effects), (*Niobium, *Superconductivity), (*Niobium alloys, Superconductivity), (*Zirconium alloys, Superconductivity), Critical current, Critical field, Critical temperature, Niobium base alloys, Reviews, Tin alloys.

For abstract, see NSA 28 04, number 09467.

ITF-72-186-P/GA PC$3.25/MF$1.45
Akademiya Nauk Ukrainskoi SSR, Kiev. Institut Teoreticheskoi Fiziki.
APPLICATION OF A METHOD OF IRREDUCIBLE TENSOR OPERATORS TO THE INVESTIGATION OF ONE-PARTICLE ELECTRODIPOLE TRANSITIONS IN ANTIFERRODIELECTRICS.
E. G. Petrov, and V. N. Kharkyanen. 1972, 24p
In Russian. U.S. Sales Only.

Descriptors: (*Antiferroelectric materials, *Energy-level transitions), Dielectric materials, Dipoles, Excited states, Ground states, Tensors.

For abstract, see NSA 28 04, number 10570.

ITF-73-22-P/GA PC$3.00/MF$1.45
Akademiya Nauk Ukrainskoi SSR, Kiev. Institut Teoreticheskoi Fiziki.
RESEARCH IN GROUP DECOMPOSITION FOR BINARY DISTRIBUTION FUNCTIONS OF PARTICLE SYSTEMS WITH ELECTROSTATIC INTERACTION. II. THE THIRD VIRIAL COEFFICIENT.
I. R. Yukhnovskii, M. F. Golovko, and V. S. Vysochanskii. 1973, 15p
In Russian. U.S. Sales Only.

Descriptors: (*Particles, *Electrostatics), Decomposition, Diagrams, Dipoles, Distribution functions, Interactions, Ions, Molecular crystals.

For abstract, see NSA 28 04, number 10571.

JINR-E14-7012/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Neutron Physics.
PHONON DENSITY OF STATES AND COHERENT INELASTIC NEUTRON SCATTERING ON COMPLEX STRUCTURES.
H. Eschrig, K. Feldmann, K. Hennig, W. John, and L. van Loyen. 1973, 8p
U.S. Sales Only.

Descriptors: (*Crystals, *Dispersion relations), (*Intermetallic compounds, *Neutron reactions), Coherent scattering, Inelastic scattering, Magnesium alloys, Neutron spectra, Phonons, Zinc alloys.

For abstract, see NSA 28 04, number 10574.

JINR-E2-7038/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
ENERGY OF MAGNETIC EXCITATIONS AND MAGNETIZATION IN COMPRESSIBLE FERROMAGNET.
F. R. Vukajlovic, and J. P. Vlahov. 1973, 10p
U.S. Sales Only.

Descriptors: (*Ferromagnetic materials, *Magnetic properties), Energy, Excitation, J-j coupling, Lattice parameters, Low temperature, Magnetic compression, Magnetism, Numerical solution, Temperature dependence.

For abstract, see NSA 28 05, number 12558.

JINR-E4-7030/GA PC$3.75/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
METAL-INSULATOR TRANSITION IN A TWO-BAND HUBBARD-MODEL WITH APPLICATION TO VO.
K. Elk. 1973, 35p
U.S. Sales Only.

Descriptors: (*Vanadium oxides, *Phase transformations), (*Dielectric materials, Phase transformations), (*Metals, Phase transformations), Electric conductivity, Electronic structure, Gain, Hysteresis, Instability, Numerical solution.

For abstract, see NSA 28 05, number 11130.

JINR-E4-7150/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
MODEL SPIN HAMILTONIANS INCLUDING LONG-RANGE FERROMAGNETIC INTERACTION.
I. G. Brankov, A. S. Shumovskii, and V. A. Zagrebnov. 1973, 7p
U.S. Sales Only.

Descriptors: (*Hamiltonians, *Interaction range), Ferromagnetism, Spin, Thermodynamics.

For abstract, see NSA 28 06, number 15140.

JINR-P14-7026/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Neutron Physics.
POSSIBLE STUDY OF NUCLEAR MAGNETISM IN VAN VLECK PARAMAGNETICS USING NEUTRON SCATTERING.
K. Hennig, and E. I. Sharapov. 1973, 11p
In Russian. U.S. Sales Only.

Descriptors: (*Praseodymium alloys, *Antiferromagnetism), (*Copper alloys, Antiferromagnetism), (*Paramagnetism, *Van vleck theory), Intermetallic compounds, Neutron diffraction, Nuclei, Ultralow temperature.

For abstract, see NSA 28 06, number 13254.

JINR-P4-7001/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
INFRARED ASYMPTOTIC FORM METHOD IN THE ISING MODEL. 1. (FUNCTIONAL REPRESENTATION).
V. A. Zagrebnov. 1973, 15p
In Russian. U.S. Sales Only.

Descriptors: (*Metals, *Correlation functions), (*Paramagnetism, Correlation functions), Asymptotic solutions, Critical heat flux, Functionals, Spin.

For abstract, see NSA 28 04, number 10575.

JINR-P4-7097/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
SUSCEPTIBILITY OF THE ISING MODEL IN THE WEISS LIMIT.
V. A. Zagrebnov, and I. G. Brankov. 1973, 8p
In Russian. U.S. Sales Only.

Descriptors: (*Magnetic susceptibility, *Curie-weiss law), Ferromagnetism, Metals, Solids.

For abstract, see NSA 28 04, number 10576.

JINR-P4-7143/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
INFRARED ASYMPTOTIC FORM METHOD IN THE ISING MODEL II. (CORRELATION FUNCTION IN CRITICAL REGION).
V. A. Zagrebnov. 1973, 19p
In Russian. U.S. Sales Only.

Descriptors: (*Metals, *Correlation functions), Asymptotic solutions, Critical heat flux, Paramagnetism.

For abstract, see NSA 28 04, number 10577.

JINR-P4-7152/GA PC$3.25/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Theoretical Physics.
OVERHAUSER EFFECT IN THE CONDITIONS OF UNEQUILIBRATION OF THE CONDUCTION ELECTRON KINETIC DEGREES OF FREEDOM.
Kh. M. Bikkin, I. P. Vlakhov, and V. P. Kalashnikov. 1973, 24p
In Russian. U.S. Sales Only.

Descriptors: (*Metals, *Overhauser effect), Electron spin resonance, Electron temperature, Electrons, Magnetic resonance, Polarization, Spin orientation, Thermal equilibrium.

For abstract, see NSA 28 05, number 12559.

LA-UR-73-795/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
RADIATION INDUCED DAMAGE TO NACL BY 10.6 MU FRACTIONAL JOULE, NANOSECOND PULSES.
W. H. Reichelt, and E. E. Jr. Stark. 10p CONF-730528-2
Contract W-7405-eng-36

Descriptors: (*Sodium chlorides, *Physical radiation effects), Breakdown, Laser radiation, Pulses, Threshold energy.

For abstract, see NSA 28 05, number 12566.

LBL-1168/GA PC$3.25/MF$1.45
California Univ., Berkeley. Lawrence Berkeley Lab.
CHARACTERISTICS OF DISLOCATION GLIDE THROUGH A RANDOM ARRAY OF OBSTACLES.
D. H. Klahn, and J. W. Jr. Morris. Nov 72, 22p CONF-721064-3
Contract W-7405-eng-48

Descriptors: (*Dislocations, *Motion), (*Crystals, Dislocations), Heating, Randomness, Solids, Stresses, Temperature dependence, Velocity.

For abstract, see NSA 28 04, number 10589.

N-73-13731/GA PC$7.60/MF$1.45
Westinghouse Electric Corp., Pittsburgh, PA.
INVESTIGATION OF SUPERCONDUCTING INTERACTIONS AND AMORPHOUS SEMICONDUCTORS. FINAL REPORT.
M. A. Janocko, C. K. Jones, J. R. Gavaler, D. W. Deis, and M. Ashkin. Oct 72, 245p NASA-CR-129524
Contract NASw-1760

Descriptors: (*Semiconductor materials, *Electrical properties), (*Superconducting magnets, *Performance), Amorphous state, Deformation, Design, Films, Interactions, Magnetic materials, Pressure dependence, Silicon, Solenoids, Superconductivity, Superconductors, Switches, Transition temperature, Type-ii superconductors, Vanadium base alloys.

For abstract, see NSA 28 05, number 11788.

N-73-13736/GA PC$4.00/MF$1.45
National Aeronautics and Space Administration, Langley Station, VA. Langley Research Center.
STUDY OF BERYLLIUM AND BERYLLIUM--LITHIUM COMPLEXES IN SINGLE CRYSTAL SILICON.
R. K. Crouch, J. B. Robertson, and T. E. Jr. Gilmer. Dec 72, 31p

Descriptors: (*Beryllium, *Thermal diffusion), (*Lithium, Thermal diffusion), (*Silicon, Thermal diffusion), Annealing, Crystal defects, Doped materials, Monocrystals, Quenching, Beryllium complexes, Lithium complexes.

For abstract, see NSA 28 05, number 11227.

NP-19771/GA PC$4.75/MF$1.45
Commissariat a l'Energie Atomique, Saclay (France). Centre d'Etudes Nucleaires.
MULTIFILAMENTARY COMPOSITES.
J. P. Pouillange, and G. Prost. 18 Mar 71, 52p
In French. U.S. Sales Only.

Descriptors: (*Superconductors, *Composite materials), Currents, Distribution, Filaments, Instability.

For abstract, see NSA 28 04, number 09468.

N73-29724/4GA PC$3.00/MF$1.45
Scientific Translation Service, Santa Barbara, Calif.
THE PARAMAGNETIC ROTATION OF THE PLANE OF POLARIZATION.
R. Ladenburg. Aug 73, 14p NASA-TT-F-14737
Contract NASW-2483
Tran-Transl. Into English from Z. Phys. (West Ger.), V. 46, 1927 p. 168-176.

Descriptors: *Paramagnetism, *Polarization (Spin alignment), *Zeeman effect, Curie-weiss law, Magnetic effects, Magnetic fields.

For abstract, see STAR 1120

N73-29726/9GA PC$3.00/MF$1.45
Radio Corp. of America, Princeton, N.J.
HIGH TEMPERATURE SUPERCONDUCTOR NB3GA.
L. J. Vieland, and A. W. Wicklund. Aug 73, 48p NASA-CR-2308, PRRL-73-CR-18
Contract NAS3-16060

Descriptors: *Gallium compounds, *Niobium compounds, *Superconductors, *Thin films, *Vapor deposition, Phase diagrams, Stoichiometry, Ternary alloys.

For abstract, see STAR 1120

N73-29782/2GA PC$4.25/MF$1.45
Electrotechnical Lab., Tokyo (Japan).
PHOTOCONDUCTIVE EFFECT AND ABSORPTION OF MONOCHROMATIC SUB-MM RADIATION IN N-TYPE GERMANIUM.
C. Yamanouchi, J. Kinoshita, M. Tokumoto, and K. Yoshihiro. Jan 73, 42p RR-737

Descriptors: *Germanium, *Monochromatic radiation, *Photoconductivity, *Radiation absorption, Activation energy, Impurities, Magnetic fields, N-type semiconductors.

For abstract, see STAR 1120

N73-29783/0GA PC$6.25/MF$1.45
Electrotechnical Lab., Tokyo (Japan).
ELECTRICAL CONDUCTION IN N-TYPE GERMANIUM AT VERY LOW TEMPERATURES.
S. Gonda. Jan 73, 83p RR-738
In Japanese; English Summary.

Descriptors: *Electrical resistivity, *Impurities, *Low temperature, *N-type semiconductors, *Stresses, Electric fields, Germanium, Magnetic fields.

For abstract, see STAR 1120

ORNL-TM-4187/GA PC$9.00/MF$1.45
Oak Ridge National Lab., Tenn.
CRYOGENIC DIELECTRICS AND SUPERCONDUCTING AND CRYOGENIC MATERIALS TECHNOLOGY FOR POWER TRANSMISSION. SEMIANNUAL REPORT, MARCH 1, 1973.
May 73, 139p
Contract W-7405-eng-26

Descriptors: (*Dielectric materials, Power transmission), (*Superconductivity, Power transmission), (*Cryogenics, Power transmission), (*Power transmission, *Economics), Cost, Electric cables, Electric conductors, Industry, Ornl.

For abstract, see NSA 28 04, number 10477.

PB-224 136/2GA PC$3.25/MF$1.45
Chalmers Univ., of Technology, Goteborg (Sweden). Research Lab. of Electronics.
TEMPERATURE DEPENDENCE OF SPIN-HAMILTONIAN PARAMETERS FOR CHROMIUM DOPED RUTILE.
Research rept.,
P. O. Andersson, A. Jelenski, and A. Lundin. Nov 72, 21p RR-110

Descriptors: (*Titanium dioxide, Electron paramagnetic resonance), Additives, Chromium, Hamiltonian functions, Rutile, Thermal analysis, Sweden.

The temperature dependence of the spin-Hamiltonian parameters for substitutional Cr(3+) - ions in single crystal rutile (TiO2) was studied. The measurements were performed at about 9.2 GHz and 35 GHz on a fine powder of single crystalline Cr-TiO2 for three temperatures, 95K, 200K, and 295K. It was found that the spin-Hamiltonian parameter D diminishes with decreasing temperature in the temperature interval studied. The behavior of g and E is more complex. A tentative extrapolation of the data towards zero degrees K was made. (Author)

PB-224 149/5GA PC$4.25/MF$1.45
California Univ., Los Angeles. School of Engineering and Applied Science.
DIFFUSION IN AGAUPD THIN FILM MICROCOUPLES,
M. Murakami, D. de Fontaine, J. M. Sanchez, and J. Fodor. Sep 73, 45p UCLA-ENG-7376
Grant NSF-GH-32577

Descriptors: (*Silver, *Diffusion), (*Gold, Diffusion), (*Palladium, Diffusion), Phase diagrams, X ray diffraction, Eigenvalues, Eigenvectors, Solid solutions, Thin films, Metal films.

Diffusion in multilayered thin film AgAuPd microcouples is studied by measuring the decay of satellite x-ray intensity scattered by the concentration modulations as a function of annealing time at temperatures ranging from 250C to 320C. The four elements of the diffusion matrix are obtained by direct determination of its eigenvalues and eigenvector directions. It is shown that two distinct microcouples with identical average concentration (in this case 60 at.% Ag, 30 at.% Au, 10 at.% Pd) are required to determine both eigenvector directions, as these are not mutually orthogonal in the Gibbs triangle. Diffusion paths are plotted in the Gibbs triangle; the paths start out by being parallel to the major eigenvector (corresponding to the largest eigenvalue) and end by being tangent to the minor eigenvector. (Modified author abstract)

PB-224 409/3GA PC$11.00/MF$1.45
Illinois Univ., Urbana. Dept. of Computer Science.
THE ENERGY TRANSPORT PROPERTIES OF ONE DIMENSIONAL ANHARMONIC LATTICES.
Doctoral thesis,
Kenichi Miura. 20 Jul 73, 176p UIUCDCS-R-73-586

Descriptors: (*Crystal lattices, Thermal conductivity), Energy transfer, Heat flux, Wave functions, Lattice parameters, Numerical integration, Computer programs, Orthogonal functions, Theses.
Identifiers: Chebychev functions, Solitary waves.

The energy transport properties of the solitary waves are studied both analytically and numerically. It was found that the piecewise linear function model clearly explains the characteristics of such waves. Numerical experiments were performed extensively to clarify the various properties of the solitary waves in the one dimensional anharmonic lattice. These results were used to interpret the heat conduction problem of the crystal lattice. (Author)

SC-B-710148(Suppl.1)/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
ION IMPLANTATION: A SELECTIVE BIBLIOGRAPHY.
D. K. Seager. May 73, 87p

Descriptors: (*Ion implantation, *Bibliographies), Indexes, Semiconductor materials.

For abstract, see NSA 28 04, number 08786.

SLA-73-5521/GA PC$3.00/MF$1.45
Sandia Labs., Albuquerque, N. Mex.
CALCULATION OF TRANSIENT THERMAL IMBALANCE WITHIN CRYSTAL UNITS FOLLOWING EXPOSURE TO PULSE IRRADIATION.
E. F. Hartman, and J. C. King. 1973, 4p CONF-730622-1

Descriptors: (*Quartz, *Physical radiation effects), (*Oscillators, Physical radiation effects), Electrons, Thermal shock, X radiation.

For abstract, see NSA 28 06, number 12964.

UCRL-51372/GA PC$4.00/MF$1.45
California Univ., Livermore. Lawrence Livermore Lab.
TIME-RESOLVED VOLTAGE BREAKDOWN IN VARIOUS INSULATORS DUE TO 2-MEV ELECTRONICS.
L. M. Erickson, and D. C. Oakley. 5 Apr 73, 22p
Contract W-7405-eng-48

Descriptors: (*Organic chlorine compounds, *Physical radiation effects), (*Ethylene, Physical radiation effects), (*Polyethylenes, Physical radiation effects), Breakdown, Dielectric materials, Electron beams, Lichtenberg figures, Mev range 01-10, Teflon, Resins, Glass.

For abstract, see NSA 28 06, number 13365.

20M. Thermodynamics

AD-767 760/2GA Reprint
North Carolina State Univ Raleigh Dept of Mathematics
STEADY-STATE TEMPERATURE DISTRIBUTION IN A FINITE SPHERICAL CONE,
Kanti A. Patel, and Walter J. Harrington. 14 Nov 72, 13p AFOSR-TR-73-1677
Grant AF-AFOSR-1779-69
Availability: Pub. in Jnl. of Applied Mathematics and Physics, (ZAMP) v24 p214-224 1973.

Descriptors: (*Conduction(Heat transfer), Boundary value problems), (*Temperature, Distribution functions), Transformations(Mathematics), Potential theory, Partial differential equations.
Identifiers: *Steady state, *Naylor transformation, Laplace equation, Harmonic functions.

In an earlier paper by the same authors, a steady-state temperature problem in a finite sector (or wedge) was presented to illustrate the use of the Naylor transform (for polar coordinates). In the paper, an analogous problem in a finite spherical cone is solved by the use of a Naylor transform for spherical coordinates. (Author)

AEEW-R-807/GA PC$4.50/MF$1.45
Atomic Energy Establishment, Winfrith (England).
INTERACTION OF DROPLET DEPOSITION AND FORCED CONVECTION IN POST-DRYOUT HEAT TRANSFER AT HIGH SUB-CRITICAL PRESSURE.
N. A. Bailey. Mar 73, 46p
U.S. Sales Only.

Descriptors: (*Forced convection, *Dryout), (*Droplets, *Deposition), High pressure, Laminar flow, Pressure dependence.

For abstract, see NSA 28 06, number 12806.

EUR-5008/GA PC$3.00/MF$1.45
European Atomic Energy Community, Ispra (Italy). Joint Nuclear Research Center.
VAPOUR-BLANKET TRANSITION ZONE IN SIMPLE BOILING-METAL SYSTEMS.
H. E. J. Schins, and M. C. Ooms. May 73, 9p
U.S. Sales Only.

Descriptors: (*Sodium, *Nucleate boiling), Stability, Vapors.

For abstract, see NSA 28 04, number 08088.

JINR-P8-7008/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
MEASUREMENT OF HEAT CONDUCTIVITY OF SOLUTION OF EXP 3 HE-- EXP 4 HE AT SUPERLOW TEMPERATURE.
N. S. Borisov, B. S. Neganov, and G. Feller. 1973, 10p
In Russian. U.S. Sales Only.

Descriptors: (*Helium ii, *Thermal conductivity), Binary mixtures, Helium 3, Helium 4, Ultralow temperature.

For abstract, see NSA 28 04, number 09454.

JINR-P8-7009/GA PC$3.00/MF$1.45
Joint Inst. For Nuclear Research, Dubna (Ussr). Lab. Of Nuclear Problems.
MEASUREMENT OF VISCOSITY OF SOLUTION OF EXP 3 HE IN EXP 4 HE AT SUPERLOW TEMPERATURES.
N. S. Borisov, B. S. Neganov, and G. Feller. 1973, 13p
In Russian. U.S. Sales Only.

Descriptors: (*Helium ii, *Viscosity), Binary mixtures, Helium 3, Helium 4, Ultralow temperature.

For abstract, see NSA 28 04, number 09455.

KFK-1779/GA PC$3.25/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Reaktorentwicklung.
HYPOTHESIS ABOUT NUCLEATION BOILING EVENTS OCCURRING AT PHASE BOUNDARIES.
G. Class, and G. F. Schultheiss. Apr 73, 24p
U.S. Sales Only.

Descriptors: (*Nucleate boiling, *Nucleation), Cracks, Liquid metals, Mechanics, Surfaces, Wetting agents.

For abstract, see NSA 28 05, number 10803.

KFK-1786/GA PC$6.50/MF$1.45
Kernforschungszentrum, Karlsruhe (West Germany). Institut fuer Experimentelle Kernphysik.
COOLING OF LONG TUBES WITH SUPERFLUID HELIUM.
G. Krafft. Apr 73, 86p
In German. U.S. Sales Only.

Descriptors: (*Helium ii, *Critical heat flux), Bubbles, Cooling, Heat transfer, Pipes, Superheating, Vaporization heat.

For abstract, see NSA 28 04, number 09456.

N73-29961/2GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
CONFORMAL MAPPING TECHNIQUE FOR TWO-DIMENSIONAL POROUS MEDIA AND JET IMPINGEMENT HEAT TRANSFER.
R. Siegel. 1973, 5p NASA-TM-X-68276, E-7497
Conf-Presented at the 5TH Intern. Heat Transfer Conf., Tokyo, 3-7 Sep. 1974.

Descriptors: *Conformal mapping, *Heat transfer, *Jet impingement, *Porous materials, Fluid flow, Liquid metals, Sweat cooling.

For abstract, see STAR 1120

N73-29965/3GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
APPLICATION OF PHASE-CHANGE TECHNIQUE TO THIN SECTIONS WITH HEATING ON BOTH SURFACES.
J. L. Hunt, J. I. Pitts, and C. B. Richie. Aug 73, 69p NASA-TN-D-7193, L-7774

Descriptors: *Computer programs, *Heat transfer coefficients, *Phase transformations, Digital computers, Thin wings.

For abstract, see STAR 1120

RD/B/M-2533/GA PC$3.00/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
THERMODYNAMIC AND TRANSPORT PROPERTIES OF WATER AT ATMOSPHERIC PRESSURE IN A CONVENIENT FORM.
M. E. Durham. Jan 73, 20p
U.S. Sales Only.

Descriptors: (*Water, *Thermodynamic properties), Density, Fluid flow, Heat transfer, Medium pressure, Medium temperature, Prandtl number,

Specific heat, Surface tension, Tables, Thermal conductivity, Thermal diffusivity, Viscosity.

For abstract, see NSA 28 04, number 08091.

RD/B/N-2627/GA PC$3.00/MF$1.45
Central Electricity Generating Board, Berkeley (England). Berkeley Nuclear Labs.
THERMODYNAMIC AND TRANSPORT PROPERTIES FOR A MIXTURE OF HELIUM WITH 1% BY VOLUME CARBON DIOXIDE.
J. P. Easby. Mar 73, 19p
U.S. Sales Only.

Descriptors: (*Helium, *Thermodynamic properties), (*Carbon dioxide, Thermodynamic properties), Binary mixtures, High temperature, Medium pressure, Prandtl number, Specific heat, Thermal conductivity, Very high temperature.

For abstract, see NSA 28 06, number 12809.

TRG-2459/GA PC$3.00/MF$1.45
Atomic Weapons Research Establishment, Aldermaston (England).
TOPAL: A COMPUTER CODE FOR INVESTIGATING METAL-LIQUID THERMAL INTERACTIONS IN SHOCK-TUBE GEOMETRY. PART 1. THEORETICAL DESCRIPTION.
K. Morgan. Jun 73, 11p GRO-44/91/26
U.S. Sales Only.

Descriptors: (*Metals, *Heat transfer), (*Liquids, Heat transfer), (*Computer codes, *T codes), Compressible flow, Computer calculations, Lagrange equations, Shock tubes.

For abstract, see NSA 28 06, number 12810.

20N. Wave Propagation

AD-767 834/5GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
PROPAGATION OF ELECTROMAGNETIC WAVES IN A WEEKLY IONIZED WARM MAGNETOPLASMA,
S. P. Mishra, P. K. Shukla, and K. D. Misra. 4 Nov 71, 10p AFCRL-TR-73-0470
Grant EOOAR-70-0070
Availability: Pub. in Australian Jnl. of Physics, v25 p265-73 1972.

Descriptors: (*Ionospheric propagation, Wave functions), (*Electromagnetic waves, Equations of motion), Plasma medium, Partial differential equations, Magnetosphere, India.
Identifiers: Maxwells equations.

Modified wave equations for a weakly ionized warm magnetoplasma are obtained by linearizing Maxwell's equations with the help of the equation of state and the conservation equations for mass, momentum, and energy. The expressions derived for the refractive index for oblique and normal wave propagation from solutions of the equation of motion and from the modified wave equations are found to be equivalent. The results are used to study wave propagation in the ionosphere and the magnetosphere. (Author)

AD-767 839/4GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
REFLECTION OF MICROWAVE THROUGH LABORATORY PLASMA,
A. K. Gwal, K. P. Singh, P. K. Shukla, and K. D. Misra. 10 Mar 71, 6p AFCRL-TR-73-0466
Grant EOOAR-70-0070
Availability: Pub. in International Jnl. of Electronics, v33 n1 p91-95 1972.

Descriptors: (*Plasma medium, *Microwaves), Electron density, Reflection, Distortion, Waveguides, India, Ionospheric propagation.

Propagation of microwaves through the laboratory plasma has been studied. Assuming the linear electron density variation, an expression for the envelope of the reflected wave has been obtained. It has been observed that the propagating wave through the microwave reflection probe is distorted when reflected back from the other end of the probe having plasma boundary. By analysing the distorted signal thus received, one can estimate the plasma parameter. (Author)

AD-768 007/7GA Reprint
Banaras Hindu Univ Varanasi (India) Inst of Tech
VLF WAVE AMPLIFICATION BY WAVE-PARTICLE INTERACTION,
R. N. Singh, and R. P. Singh. 19 Mar 71, 4p
AFCRL-TR-73-0476
Grant E00AR-70-0070
Availability: Pub. in the Physics Letters, v35A n2 p105-106, 17 May 71.

Descriptors: (*Magnetosphere, Electromagnetic waves), Plasma oscillations, Charged particles, Very low frequency, India.

A charged particle beam is assumed to move through the magnetosphere. It is shown that the VLF waves propagating at non-zero angles with the beam are amplified. (Author)

AD-768 350/1GA PC$8.00/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
ELECTROMAGNETIC PULSE PROPAGATION IN BOUNDED PLASMAS, ANISOTROPIC PLASMAS, AND LOSSY PLASMAS.
Master's thesis,
John A. Justice. Jun 73, 116p Rept no. GEP/PH/73-12

Descriptors: (*Plasma medium, *Electromagnetic pulses), (*Ionospheric propagation, Transients), Dispersion relations, Fourier analysis, Integral transforms, Wave transmission, Reflection, Saddle point method, Curve fitting, Graphics, Theses, Nuclear explosions, Terrestrial magnetism.
Identifiers: Maxwells equations, Fourier transformation, Signal processing, Faraday effect.

The dispersion of electromagnetic pulses in plasmas is considered. Maxwell's equations are used to determine the wave equation in the Fourier transform domain. Thus, the fields in the time domain are determined by inverse Fourier transformations. Asymptotic solutions for the fields are obtained via the saddlepoint method of integration. The investigation considers three different plasma models. The first model is a homogeneous, isotropic, plasma slab with infinitesimal boundaries. The reflection and transmission coefficients are found to be frequency dependent. When an air-plasma-air problem is considered, the transmission coefficient is almost one and the boundary effects are thus negligible. The second model is a homogeneous, anisotropic plasma where propagation along magnetic field lines is considered. Responses to both double exponential and delta function initial pulse shapes are obtained. The results show significant transient Faraday rotation, even for weak magnetic fields. The third model is a homogeneous, isotropic, lossy plasma. (Modified author abstract)

21. PROPULSION AND FUELS

N73-29713/7GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
GROUND AND FLIGHT EXPERIENCE WITH A STRAPDOWN INERTIAL MEASURING UNIT AND A GENERAL PURPOSE AIRBORNE DIGITAL COMPUTER.
T. D. Wolf, and R. C. Mccracken. Aug 73, 34p
NASA-TM-X-2848, H-735

Descriptors: *Attitude indicators, *Computer techniques, *Strapdown inertial guidance, Airborne/spaceborne computers, Performance tests, Self alignment, Time sharing.

For abstract, see STAR 1120

21B. Combustion and Ignition

AD-767 723/0GA PC$5.50/MF$1.45
Hercules Inc Magna Utah Bacchus Works
VELOCITY COUPLING COMBUSTION INSTABILITY.
Final rept. Aug 71-Jul 73,
Merrill W. Beckstead, M. Duane Horton, Maurice Krashin, and A. Garn Butcher. Sep 73, 207p
AFRPL-TR-73-73
Contract F04611-72-C-0003
Prepared in cooperation with Brigham Young Univ., Provo, Utah.

Descriptors: (*Combustion, Stability), (*Solid rocket propellants, Combustion), Rocket motors(Solid propellant), Burning rate, Screaming combustion, Oscillation, Rocket propellant grains, Acoustics, Captive tests.
Identifiers: T burners, Combustion stability.

The objectives of the program were: To develop an understanding of the role of velocity-coupled combustion response in solid propellant combustion instability, to evaluate various methods for quantitatively measuring this response, and to select the most appropriate method for future development and evaluation. The study was divided into three phases: Supporting analyses to provide direction for the experimental phases; a phenomenological study to determine relative effects of propellant combustion in an oscillatory environment; and the evaluation of test techniques to find a quantitative tool for characterizing velocity coupling. (Modified author abstract)

AD-767 945/9GA PC$6.25/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
NONSTATIONARY COMBUSTION OF SOLID ROCKET FUELS,
B. V. Novozhilov. 27 Sep 73, 258p Rept no. FTD-MT-24-317-74
Edited machine trans. of mono. Nestatsionarnoe Gorenie Tverdykh Raketnykh Topliv, Moscow, 1973 p1-176, by Robert D. Hill.

Descriptors: (*Solid rocket propellants, *Combustion), Rocket motors(Solid propellant), USSR, Reaction kinetics, Interior ballistics, Stability, Oscillation, Resonant frequency, Quenching(Inhibition).
Identifiers: Translations, Combustion stability.

In recent years the study of nonstationary combustion has been intensely conducted in many countries. This is conditioned by the fact that almost all processes of combustion which occur in rocket engines (ignition, transient conditions of combustion, vibration combustion, extinction, etc.) are related to nonstationary combustion. In the report the theory of the nonstationary combustion of solid rocket propellants is discussed, and experimental data which refer to such combustion behavior are given. From a single viewpoint the majority of the phenomena which occur during the nonstationary combustion of solid rocket propellants is described.

AD-767 995/4GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
BASE PRESSURE BEHIND FLAT BODIES DURING DIFFUSION NEAR-WAKE COMBUSTION,
K. E. Yurchenok. 6 Sep 73, 14p Rept no. FTD-HT-23-843-73
Edited trans. of Institut Aviatsionnogo Priborostroeniya, Leningrad. Trudy (USSR) n66 p49-56 1970, by Kathleen L. Dion.

Descriptors: (*Supersonic combustion, Pressure), Supersonic flow, Secondary injection, Equations of motion, Carbon monoxide, Specific heat, Thermal diffusion, USSR.
Identifiers: Translations, Base pressure.

A method and results are given for computing base pressure behind flat bodies during diffusion near-wake combustion. The method makes it possible to consider the effect of combustion on the rate profile in the mixing zone, and thus to more exactly determine the necessary parameters on the dividing (zero) flow line for computing the base pressure. The base pressure is considered according to the Korst method. As an example base pressure is considered during the combustion of hydrogen and carbon monoxide in air.

N73-29799/6GA PC$17.25/MF$1.45
Aerojet Liquid Rocket Co., Sacramento, Calif.
INVESTIGATION OF GASEOUS PROPELLANT COMBUSTION AND ASSOCIATED INJECTOR/CHAMBER DESIGN GUIDELINES.
Final Report.
D. F. Calhoon, J. I. Ito, and D. L. Kors. 31 Jul 73, 302p NASA-CR-121234
Contract NAS3-14379

Descriptors: *Combustion chambers, *Engine design, *Gaseous rocket propellants, *Injectors, Heat flux, Stability, Turbulent mixing.

For abstract, see STAR 1120

PB-224 210/5GA PC$7.00/MF$1.45
National Environmental Research Center, Research Triangle Park, N.C. Control Systems Lab.
PROCEEDINGS, COAL COMBUSTION SEMINAR, JUNE 19-20, 1973, RESEARCH TRIANGLE PARK, N.C. 27711.
Environmental protection technology series,
Robert E. Hall, and David W. Pershing. Sep 73, 305p EPA-650/2-73-021

Descriptors: (*Air pollution, Coal), (*Coal, *Combustion products), Nitrogen oxides, Combustion control, Furnaces, Design, Flue gases, Process variables, Reduction, Carbon monoxide, Electric power generation, Gas analysis, Gas sampling, Carbon dioxide, Sulfur dioxide, Pilot plants.

The proceedings document the 10 presentations made during the Seminar, which dealt with subjects related to EPA's research and development activities for control of air pollutant emissions from the combustion of pulverized coal. The Seminar was divided in two parts: participating in the portion on fundamental research were Rockwell International's Rocketdyne Division, KVB Engineering, Inc. and Southern California Edison Co., EPA, Holland's International Flame Research Foundation, and Jet Propulsion Laboratory; and taking part in the portion on pilot- and full-scale tests were Babcock and Wilcox (Alliance ResearcsiCenter), U.S. Bureau of Mines, Esso Research and Engineering Co., Combustion Engineering, Inc. and Tennessee Valley Authority. Purpose of the Seminar was to provide contractors and industrial representatives with the latest information on coal combustion research.

21C. Electric Propulsion

AD-768 224/8GA PC$5.00/MF$1.45
Fairchild Republic Co., Farmingdale, N.Y.
PULSED PLASMA PROPULSION TECHNOLOGY.
Interim rept. 10 May 72-10 Mar 73,
Dominic J. Palumbo, and William J. Guman. Sep 73, 56p Rept no. MS147U100 AFRPL-TR-73-79
Contract F04611-72-C-0053

Descriptors: (*Plasma engines, Performance(Engineering)), Space propulsion, Propellants, Electric engines, Halocarbon plastics, Specific impulse, Thrust, Electric arcs.

A performance level compatible with the goal of 30% thrust efficiency at 1500 seconds specific impulse set for this program was successfully demonstrated with the parallel rail pulsed ablative thruster using Telfon propellant. Three studies were carried out in order to achieve this objective-parametric variations in which the effects of interelectrode spacing and electrode angle were evaluated; propellant studies wherein the performance of alternative thermoplastics was compared to Teflon and Teflon was seeded with elements having low ionization potentials for performance evaluation; and energy transfer studies, undertaken to assess quantitatively the major energy loss mechanisms associated with the thruster. Results of the parametric variations showed that a 20 degrees included angle between electrodes yields optimal performance at discharge energies up to 450J. At higher energies performance appears to be insensitive to this parameter. It was also demonstrated that increasing the interelectrode spacing leads to higher specific impulse and lower thruster/power at a given discharge energy. (Modified author abstract)

LA-5199-MS/GA PC$3.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
EXPERIMENTS IN THE NEW LASL MPD ARC-JET TEST FACILITY.
D. B. Fradkin, and D. J. Roehling. Feb 73, 9p
Contract W-7405-eng-36

Descriptors: (*Propulsion, *Magnetohydrodynamics), Efficiency, Electric arcs, Gas flow, Lithium, Performance, Velocity.

For abstract, see NSA 28 05, number 12562.

N73-29808/5GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
MEASUREMENT OF BEAM DIVERGENCE OF 30-CENTIMETER DISHED GRIDS.
R. L. Danilowicz, V. K. Rawlin, B. A. Banks, and E. G. Wintucky. 1973, 15p NASA-TM-X-68286, E-7631
Conf-Proposed for Presentation at the 10TH Elec. Propulsion Conf., Lake Tahoe, Nevada, 31 Oct. - 2 Nov. 1973; Sponsored by Aiaa.

Descriptors: *Energy dissipation, *Ion beams, *Ion engines, Divergence, Electron bombardment, Error analysis, Grids, Parameterization.

For abstract, see STAR 1120

21D. Fuels

BNL-17800/GA PC$3.00/MF$1.45
Brookhaven National Lab., Upton, N. Y.
METHANOL AS A FUEL IN THE URBAN ENERGY ECONOMY AND POSSIBLE SOURCE OF SUPPLY.
M. Steinberg, F. J. Salzano, M. Beller, and B. Manowitz. Apr 73, 20p

Descriptors: (*Methanol, *Energy sources), Coal, Comparative evaluations, Economics, Electricity, Fossil fuels, Gasification, Human populations, Methane, Nuclear power plants, Petroleum, Synthesis.

For abstract, see NSA 28 04, number 10474.

CONF-730807-3/GA PC$4.00/MF$1.45
Oak Ridge National Lab., Tenn.
HYDROGEN AND SYNTHETIC FUELS FOR THE FUTURE.
J. W. Michel. 1973, 36p

Descriptors: (*Hydrogen, *Synthetic fuels), (*Ammonia, Synthetic fuels), (*Hydrazine, Synthetic fuels), (*Methanol, Synthetic fuels), Electricity, Environment, Ethanol, Fossil fuels, Gasoline, Methane, Nuclear power, Pollution, Production, Solar energy, Storage, Transport.

For abstract, see NSA 28 06, number 15019.

PB-223 743/6GA PC$13.25/MF$1.45
Colorado Univ., Boulder. Dept. of Civil and Environmental Engineering.
CONSTITUTIVE RELATIONS OF COAL ANNUAL REPORT 1972,
Hon-Yim Ko, and Kurt H. Gerstle. 12 Sep 73, 223p
BuMines-OFR-58-73
Grant G0110894

Descriptors: (*Coal, Rock properties), Rock tests, Mechanical properties, Compressive strength, Tensile strength, Creep properties.

Most of the studies performed during 1972 were done on coal from two sources: the Old Ben Mine No. 22 in Illinois, and the Bruceton Experimental Mine of the Bureau of Mines in the Pittsburgh seam of Pennsylvania, which may be considered typical of coal sources of economic importance in the midwestern and eastern parts of the United States. While the researchers were restricted to grab sampling within the Old Ben Mine to minimize interference with commercial operations, they received help in securing material from the Bruceton Mine under controlled conditions of location and orientation, which permitted them to attempt a study of the variation of coal properties over the depth of the Pittsburgh seam. The study involved Hoek cell tests of the Old Ben and Pittsburgh coal, cubical tests, zonal testing of the Pittsburgh coal, tests for compressive strength, tests for tensile strength, behavior of coal under sustained loads, and petrographic investigation.

21E. Jet and Gas Turbine Engines

AD-767 947/5GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
LIFE OF FATIGUE CRACKS ON ROTOR BLADES OF TURBINES IN GAS TURBINE ENGINES,
V. A. Pivovarov. 21 Sep 73, 13p Rept no. FTD-HT-23-817-73
Edited trans. of Voprosy Dinamiki i Prochnosti (USSR) n214 p46-55 1971, by Marilyn Olaechea.

Descriptors: (*Gas turbine blades, Fatigue(Mechanics)), Rotor blades(Turbomachinery), Cracks, Crack propagation, Loading(Mechanics), Stresses, Numerical analysis, USSR.
Identifiers: Translations, Fatigue life.

The report presents experimental data derived from tests performed on gas turbine blades to ascertain the relationship between cracks and blade fatigue life.

AD-767 957/6GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
LIFETIME OF TURBINE BLADES WITH DIFFERENT RUNNING TIMES IN OPERATION,
L. I. Martynenko, and L. V. Morozov. 21 Sep 73, 14p Rept no. FTD-HT-23-814-73
Edited trans. of Voprosy Dinamiki i Prochnosti (USSR) n214 p23-31 1971, by Louise E. Heenan.

Descriptors: (*Turbine blades, Fatigue(Mechanics)), Rotor blades(Turbomachinery), Life expectancy, Blade airfoils, Stresses, Cracks, Trailing edge, USSR.
Identifiers: Translations, Fatigue tests.

The report presents the results of tensometric studies on blades during fatigue tests and the curves of their defect capacity during operation.

AD-767 958/2GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio

WORK CAPACITY OF GAS TURBINE BLADES LOADED BY MULTIPLE START-UPS,
Z. S. Pallei, A. T. Altukhov, C. M. Dorofko, L. F. Kokhanovskii, and E. V. Chemokhud. 12 Sep 73, 16p Rept no. FTD-HT-23-812-73
Edited trans. of Voprosy Dinamiki i Prochnosti (USSR) n214 p3-15 1971 by Marilyn Olaechea.

Descriptors: (*Gas turbine blades, Life expectancy), Fatigue(Mechanics), Cracks, Loading(Mechanics), Stresses, Vibration, Failure(Mechanics), USSR.
Identifiers: Translations.

The report studies the effect of natural engine start-ups on the work capacity of gas turbine rotor blades. Rotor blades of the third stage in a turbine from a AI-20 engine, which had previously accrued operational times of 2375 and 6000 h, were loaded in multiple start-up regimes. Residual life and the logarithmic decrement in vibrations were the parameters used to describe the strength of the rotor blades. (Author)

AD-767 988/6GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
REGULARITIES IN THE ACCUMULATION OF DEFECTS IN MATERIALS DURING THERMOCYCLIC LOADING,
Yu. F. Belrev, and L. V. Morozov. 17 Sep 73, 12p Rept no. FTD-HT-23-816-73
Edited trans. of Voprosy Dinamiki i Prochnosti (USSR) n214 p39-45 1971, by Louise E. Heenan.

Descriptors: (*Gas turbine engines, Defects(Materials)), Steel, Turbine parts, Life expectancy, Thermal stresses, USSR, Fatigue(Mechanics), Thermal shock.
Identifiers: *Fatigue tests, Translations.

Some parts in gas turbine engines operate under nonstationary thermal loads, which substantially affects their life. In order to study the effect of nonstationary thermal loads on the lifetime of parts, the authors examined the effect of thermal shocks on the lifetime of two-dimensional specimens made from EI-435 steel.

AD-767 992/1GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
STUDY OF FATIGUE CHARACTERISTICS IN TURBINE ROTOR BLADES,
L. I. Martynenko, and L. V. Morozov. 12 Sep 73, 13p Rept no. FTD-HT-23-813-73
Edited trans. of Voprosy Dinamiki i Prochnosti (USSR) n214 p16-22 1971, by Louise E. Heenan.

Descriptors: (*Gas turbine blades, Fatigue(Mechanics)), Rotor blades(Turbomachinery), Stresses, Blade airfoils, Trailing edge, Life expectancy, Cracks, USSR.
Identifiers: Translations, Fatigue tests.

The report presents the results of a dynamic tensometric study conducted for the purpose of determining stress distribution along the blade foil and fatigue tests of rotor blades for gas-turbine engines.

AD-767 993/9GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
APPROXIMATION OF THE RESULTS OF FATIGUE TESTS,
L. I. Martynenko. 12 Sep 72, 11p Rept no. FTD-HT-23-815-73
Edited trans. of Voprosy Dinamiki i Prochnosti (USSR) n214 p32-38 1971, by Edwin P. Pentecost.

Descriptors: (*Turbine blades, Fatigue(Mechanics)), Probability, Random variables, Distribution functions, Oscillation, USSR.
Identifiers: Translations, Fatigue tests.

The report develops approximations for the results of fatigue tests of turbine blades.

AD-767 994/7GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
USE OF A NONDESTRUCTIVE METHOD TO MONITOR AND EVALUATE WORK CAPACITY OF TURBINE BLADES IN GAS TURBINE ENGINES,
Yu. F. Belyaev, E. A. Konyaev, and A. Ya. Prishepov. 17 Sep 73, 12p Rept no. FTD-HT-23-818-73
Edited trans. of Voptosy Dinamiki i Prochnosti (USSR) n214 p56-65 1971, by Marilyn Olaechea.

Descriptors: (*Gas turbine blades, Non-destructive testing), Life expectancy, Electromagnetic fields, Sensors, Electrical conductance, Thermal analysis, USSR.
Identifiers: Translations.

The report describes the use of an electroinductive method for the nondestructive monitoring of the physical properties of an operating turbine blade.

AD-768 052/3GA PC$3.00/MF$1.45
Foreign Technology Div Wright-Patterson AFB Ohio
FREE VOLUMETRIC VIBRATIONAL MACHINING OF GAS TURBINE ENGINE BLADES,
A. G. Shabotenko, S. V. Khazanovich, and E. M. Koloshchuk. 6 Sep 73, 12p Rept no. FTD-HT-23-811-73
Edited trans. of Samoletostroenie Tekhnika Vozdushnogo Flota (USSR) n28 p137-142 1972, by Victor Mesenzeff.

Descriptors: (*Gas turbine blades, Manufacturing methods), Vibrators(Mechanical), Abrasives, Cleaning, Grinding, Life expectancy, USSR.
Identifiers: Translations.

The report describes work performed in replacing manual fitting and polishing operations during the machining of the GTRD blade foil profile with vibrational grinding and vibrational polishing.

AD-768 193/5GA PC$3.00/MF$1.45
Royal Aircraft Establishment Farnborough (England)
THE IDENTIFICATION OF AIRCRAFT POWERPLANT DYNAMIC RESPONSE FROM FLIGHT TESTS USING POWER SPECTRAL TECHNIQUES.
Technical rept.,
R. B. Lumsden. Jul 73, 46p Rept no. RAE-TR-73049 DRIC-BR-35900

Descriptors: (*Jet engines, *Control systems), Power spectra, Throttling, Response, Linear systems, Transfer functions, Mathematical models, Great Britain.
Identifiers: Dynamic response.

Power spectral techniques have been used successfully to identify the transfer function of the Rolls Royce Avon engines in a Comet aircraft from flight results. Although primarily an investigation of the method, the results are interesting. The transfer function is found to depend on the magnitude of the input to the autothrottle servo but not on the mean level of thrust at typical approach settings. The output of a second-order model determined from spectral analysis is compared with the flight recorded acceleration output using identical input and a good match is found. As an application, the new model is incorporated in the investigation of a Comet glide path autopilot and autothrottle system and this analysis indicates that the conventional model underestimates throttle activity. The application of pseudo random binary sequences to the identification of engine response is shown to have advantages which include using fairly small perturbations in the normal operating region and obtaining the total frequency response from one run during which the flight conditions remain constant. (Author)

AD-768 200/8GA PC$7.00/MF$1.45
Sundstrand Aviation Rockford Ill
DEVELOPMENT OF A LIGHTWEIGHT HYDRAULIC STARTER SYSTEM FOR AN AIRBORNE AUXILIARY POWER UNIT.
Final rept. 14 Jun 71-30 Apr 73,
Stephen C. Paskevich, Walter J. Iseman, and Richard W. Reynolds. Aug 73, 322p AFAPL-TR-73-65
Contract F33615-71-C-1695

Descriptors: (*Engine starters, Hydraulic systems), Auxiliary power plants, Aircraft equipment, Hydraulic accumulators, Engines + motors, Weight.
Identifiers: Hydraulic motors.

A report is made of the design study, fabrication and testing of an advanced high pressure hydraulic starting system suitable for use on a high powered lightweight auxiliary power unit (ADP). The purpose of the study was to develop the smallest lightest possible hydraulic starting system for a 400 HP APU being developed under Air Force Contract F33615-69-C-1100. Key development items were: (1) an 8000 psi helium pressurized metal bellows accumulator using a high strength steel shell with carbon fiber Epoxy composite overwrap; (2) an 8000 psi hydraulic motor and hydraulic intensifier unit utilizing only one hydraulic unit; and (3) a hydraulic flow sensing starter cutout valve requiring no electrical inputs. The report describes the design rationale in selecting parameters and specific hardware to build an operating system as well as actual test results. (Author)

AD-768 238/8GA Reprint
Cornell Univ Ithaca N Y
COMPRESSIBLE UNSTEADY INTERACTIONS BETWEEN BLADE ROWS,
Colin Osborne. 20 Oct 72, 7p
Sponsored in part by Air Force Office of Scientific Research, Arlington, Va. Revision of report dated 3 Aug 72.
Availability: Pub. in AIAA Jnl., v11 n3 p340-346 Mar 73.

Descriptors: (*Axial-flow compressor blades, Compressible flow), Turbojet engines, Fluid mechanics, Interactions, Cascade structures.

The effects of compressibility on the unsteady forces generated by the aerodynamic interaction of blade rows in a jet engine are investigated. Both potential-flow interactions and viscous-wake interactions are treated, and the unsteady upwash distributions for these are found in a manner similar to the Kemp-Sears technique for the incompressible-flow problem. The unsteady forces are found from a recently developed theory (by the present author) in which the unsteady incompressible thin-airfoil theory of Sears was extended to the compressible case by using the Matched Asymptotic Expansions technique. The results for all the interactions indicate a significant decrease in the lift forces with increasing Mach number, M until M = 0.9 or so, where the results tend to blow up due to the Prandtl-Glauert stretching involved in deriving the unsteady subsonic thin-airfoil theory. (Author)

AD-768 287/5GA PC$3.75/MF$1.45
Braun (C F) and Co Alhambra Calif
TURBOJET AIRCRAFT ENGINE TEST CELL POLLUTION ABATEMENT STUDY.
Final rept. Jul-Dec 72,
George F. Davies, and Richard H. Crow. 29 Jun 73, 93p NCEL-CR-74.001
Contract N62399-72-C-0020

Descriptors: (*Turbojet engines, *Air pollution), (*Exhaust gases, Turbojet engines), Particles,

Carbon monoxide, Nitrogen oxides, Hydrocarbons, Aldehydes, Incinerators, Filters(Fluid), Electrostatic precipitation, Separation, Test facilities.
Identifiers: *Air pollution control equipment, J-79 engines, Performance evaluation, Scrubbers, Wet methods, Dry methods, Cyclone separators, Venturi separators, Packed tower scrubbers.

The report summarizes the results of a survey and analysis of the application of conventional air pollutant abatement systems to the exhaust gas from jet engine test cells. The following methods for gas treatment were investigated: wet scrubbers, incinerators, electrostatic precipitators, filters, dry inertial collectors. The least costly methods for meeting present emission standards are water scrubbing systems. One of the most attractive of wet scrubbers using Koch Flexitrays is developed in detail. The report covers the associated problem of water supply and disposal. The report also includes research and development suggestions for test cell emission control. (Author)

AD-768 351/9GA PC$5.75/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
THE THEORY OF AN ELECTROSTATIC METAL-PARTICLE SENSOR OPERATING IN A JET ENGINE EXHAUST.
Master's thesis,
Jack Allen Labo. Jun 73, 73p Rept no. GEP/PH/73-13

Descriptors: (*Probes(Electromagnetic), Reliability(Electronics)), (*Jet engines, Exhaust gases), (*Exhaust gases, Probes(Electromagnetic)), Particle size, Electrostatic fields, Plasma sheath, Charged particles, Theses.

An electrostatic probe is studied as a charged metal particle detector in a jet engine exhaust from both a theoretical and experimental standpoint. The theoretical development concentrated on the electrostatic particle-probe interaction problem. The mechanism by which a moving charged particle induces a voltage pulse in a probe sensing circuit is studied and a practical model for the particle-probe system is developed and the resulting voltage pulses are explained by means of a capacitive equivalent electrical circuit. In order to predict the voltage pulse waveform, the changing capacitance between a moving charged particle and an electrostatic probe is determined, and the predicted voltage pulse is found to depend upon the particle charge and the probe sensing circuit. The interaction of an uncharged particle with a biased probe and the jet engine exhaust plasma effects are briefly discussed. (Modified author abstract)

N73-29806/9GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
STEADY-STATE AND DYNAMIC PRESSURE PHENOMENA IN THE PROPULSION SYSTEM OF AN F-111A AIRPLANE.
F. W. Burcham, D. L. Hughes, and J. K. Holzman. Jul 73, 99p NASA-TN-D-7328, H-741

Descriptors: *Air flow, *Aircraft engines, *Engine failure, *F-111 aircraft, *Inlet flow, *Stalling, Aerodynamic characteristics, Engine inlets, Performance tests, Pressure distribution.

For abstract, see STAR 1120

N73-29807/7GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
INFLUENCE OF NOISE REQUIREMENTS ON STOL PROPULSION SYSTEM DESIGNS.
R. J. Rulis. 1973, 14p NASA-TM-X-68280, E-7601
Conf-Presented at the 42ND Meeting of the Propulsion and Energetics Panel of the Advisory Group for Aerospace Res. And Develop., NATO, Schliersee, Germany, 17-21 Sep. 1973.

Descriptors: *Aircraft noise, *Engine design, *Short takeoff aircraft, Aircraft configurations, Exhaust systems, Noise reduction.

For abstract, see STAR 1120

N73-29809/3GA PC$3.25/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
PRELIMINARY STUDY OF TURBOJETS WITH ROTARY FLOW INDUCTORS FOR A LOW-NOISE SUPERSONIC TRANSPORT.
J. F. Dugan. Apr 73, 25p NASA-TM-X-68233, E-7450

Descriptors: *Inductors, *Noise intensity, *Supersonic transports, *Turbomachinery, Noise reduction, Pressure, Temperature effects.

For abstract, see STAR 1120

N73-29810/1GA PC$3.75/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
CONCEPTUAL STUDY OF FOUR SUBSONIC VTOL PROPULSION SYSTEMS.
W. C. Strack. 1973, 33p NASA-TM-X-68279

Descriptors: *Ejectors, *Lift fans, *Propulsion system performance, *Subsonic flow, *Turbofans, Cargo aircraft, Jet aircraft, Passenger aircraft, Transport aircraft.

For abstract, see STAR 1120

N73-29812/7GA PC$7.00/MF$1.45
General Electric Co., Cincinnati, Ohio. Aircraft Engine Group.
AERO-ACOUSTIC DESIGN AND TEST OF A MULTIPLE SPLITTER EXHAUST NOISE SUPPRESSOR FOR A 0.914M DIAMETER LIFT FAN.
D. L. Stimpert. Jan 73, 296p NASA-CR-121108, R73AEG282
Contract NAS3-15556

Descriptors: *Aircraft noise, *Exhaust systems, *Lift fans, *Noise reduction, *V/stol aircraft, Aircraft configurations, Aircraft design, Performance tests.

For abstract, see STAR 1120

21F. Nuclear Propulsion

LA-5285-MS/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
RECOMMENDED USE OF SI UNITS IN THE NUCLEAR ROCKET ENGINE PROGRAM.
R. J. Bohl. May 73, 26p
Contract W-7405-eng-36

Descriptors: (*Space propulsion reactors, *Measuring methods), Diagrams, Dimensions, Energy, Length, Mass, Rockets, Standards, Temperature measurement, Time measurement, Velocity.

For abstract, see NSA 28 06, number 14537.

N-73-12692/GA PC$5.45/MF$1.45
United Aircraft Corp., East Hartford, Conn. Research Labs.
DEVELOPMENT OF RF PLASMA SIMULATIONS OF IN-REACTOR TESTS OF SMALL MODELS OF THE NUCLEAR LIGHT BULB FUEL REGION.
W. C. Roman, and J. F. Jaminet. Sep 72, 130p NASA-CR-129299, L-910900-12
Contract SNPC-70

Descriptors: (*Light bulb reactors, Reactor cores), (*Reactor cores, *Plasma simulation), (*Space propulsion reactors, Reactor cores), Environment, Functional models, Lasl, Mockup, Nuclear furnace reactor, Testing.

For abstract, see NSA 28 04, number 10037.

21G. Reciprocating Engines

AD-768 011/9GA PC$2.75/MF$1.45
Army Test and Evaluation Command Aberdeen Proving Ground Md
FIELD TESTING OF AUTOMOTIVE ENGINES.
Final rept. on materiel test procedure.
9 May 73, 9p Rept no. TOP-2-2-721

Descriptors: (*Spark ignition engines, Test methods), (*Compression ignition engines, Test methods), Maintenance, Lubricants, Fuels, Fuel consumption, Environmental tests.
Identifiers: *Common engineering test procedures.

The report provides guidance for development testing of field performance of automotive engines installed in wheeled and tracked vehicles. It describes preliminary activities and requirements for initial inspection, servicing, and safety evaluation. It lists supporting tests including those applicable to engine performance under severe operating conditions. It provides supplementary instructions covering basic vehicle subtests and endurance, durability, and reliability. It is designed primarily for reciprocating internal combustion engines but applicable to other types. (Modified author abstract)

AD-768 192/7GA PC$7.75/MF$1.45
Kentucky Univ Lexington
A MULTIPRODUCT ASSEMBLY LINE BALANCING PROBLEM.
Research rept.,
Jimmy Rayomond McClanahan. May 72, 113p
Master's thesis.

Descriptors: (*Production control, *Scheduling), (*Internal combustion engines, *Assembling), Engine structures, Time studies, Decision making, Management control systems, Mathematical models, Computer programs, Theses.

The report considers the situation where the number of products to be assembled exceed the number of assembly lines and hence more than one product must be run on the same line. It is assumed that no two products will be run on the same line at the same time, therefore, the sequencing model can not be used for this situation. The problem is approached by first finding the number of work stations required for the desired production of the products to be assembled on the line. Then each product is considered individually and different balances are obtained by using either a hand calculation method or a computer method. Then a criterion is established to find the best balances obtained. The procedure developed is applied to an industrial type problem where two workers man each work station. The major differences between this case and the classical model of one worker at each station are discussed. (Author)

21H. Rocket Motors and Engines

AD-767 876/6GA PC$4.75/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
AN APPARATUS FOR MEASURING SMALL VARIATIONS IN THRUST.
Master's thesis,
Monte Tom Lorrigan. Jun 71, 52p Rept no. GA/ME-71-1

Descriptors: (*Convergent divergent nozzles, Thrust), (*Rocket Motor nozzles, Thrust), Combustion chambers, Combustion chamber gases, Nozzle throats, Nozzle area ratio, Instrumentation, Theses.

The report describes a development of instrumentation and techniques for evaluating performance of small convergent-divergent nozzles with a

precision of at least 0.99. The nozzles tested were mounted on a pendulum thrust chamber. During testing the thrust chamber would deflect an aluminum strip on which was mounted a strain gage used to evaluate thrust for various chamber pressures. A throat area of approximately 1/2 sq in was used. Thrust values of 29-30.5 foot pounds were obtained at a chamber pressure of 110 in Hg gage. Two of the nozzles were submerged 0%, 20%, and 40% of overall nozzle length. (Author)

AD-768 315/4GA PC$8.75/MF$1.45
Hercules Inc Magna Utah Bacchus Works
TECHNIQUES FOR ASSESSING CASE LINER-BOND INTEGRITY IN SOLID PROPELLANT ROCKET MOTORS.
Final rept. 15 Dec 71-15 Jul 73,
J. McKay Anderson, Terry D. Oavelka , and Perry S. Bruno. Sep 73, 445p AFRPL-TR-73-75
Contract F04611-72-C0009

Descriptors: (*Rocket motors(Solid propellant), *Rocket cases), (*Bonding, Structural properties), (*Rocket propellant grains, Bonding), Shear stresses, Tensile properties, Thermal stresses, Manufacturing methods, Sampling, Test methods.
Identifiers: Finite element analysis.

The report documents results of an 18-month study program to develop improved methods for case bond structural analysis. The study was limited to unflawed bond systems in solid propellant rocket motors. In Task I of the program, parametric stress solutions were obtained for cylindrical motor configurations with flapped and right-angle bond terminations. In Task II of the program, improved test sample configurations were developed for the measurement of case bond tensile and shear strength. Based on results obtained from this program, techniques for the assessment of case bond integrity have been placed on a level equivalent to existing techniques for the assessment of grain integrity at the centerport. (Modified author abstract)

LA-5231-MS/GA PC$4.00/MF$1.45
Los Alamos Scientific Lab., N. Mex.
ENCOMIUM ON SOLAR SAILING.
T. P. Cotter. May 73, 8p
Contract W-7405-eng-36

Descriptors: (*Space vehicles, *Propulsion), (*Solar radiation, *Uses), Space flight.

For abstract, see NSA 28 05, number 12563.

N73-29805/1GA PC$18.50/MF$1.45
Thiokol Chemical Corp., Brigham City, Utah. Wasatch Div.
STUDY OF SOLID ROCKET MOTOR FOR SPACE SHUTTLE BOOSTER, VOLUME 2, BOOK 1.
Final Report.
15 Mar 72, 329p NASA-CR-123729, PUBL-0372-36175
Contract NAS8-28430

Descriptors: *Propulsion system configurations, *Rocket engine design, *Solid propellant rocket engines, *Space shuttle boosters, Ground support equipment, Management planning, Systems analysis, Technology utilization.

For abstract, see STAR 1120

N73-29811/9GA PC$13.50/MF$1.45
Bell Aerospace Co., Buffalo, N.Y.
EARTH STORABLE BIMODAL ENGINE, PHASE 1.
Final Report.
Mar 73, 230p BELL-8706-933005
Contracts NAS7-100, JPL-953530
Subm-Prepared for JPL.

Descriptors: *Cooling systems, *Liquid propellant rocket engines, *Propulsion system configurations, *Rocket engine design, *Storable propellants, Prediction analysis techniques, Propellant chemistry, Propellant properties.

For abstract, see STAR 1120

N73-29813/5GA PC$5.25/MF$1.45
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
APOLLO 14 MISSION REPORT. SUPPLEMENT 5: DESCENT PROPULSION SYSTEM FINAL FLIGHT EVALUATION.
A. T. Avveaire, and S. C. Wood. Sep 72, 61p NASA-TM-X-69491, MSC-04112-SUPPL-5
Contract NAS9-8166
Subm-Prepared in Cooperation with TRW Systems Group, Redondo Beach, Calif.

Descriptors: *Apollo 14 flight, *Lunar module, *Propulsion system performance, Descent propulsion systems, Specific impulse.

For abstract, see STAR 1120

N73-29820/0GA PC$3.75/MF$1.45
Thiokol Chemical Corp., Brigham City, Utah. Wasatch Div.
STUDY OF SOLID ROCKET MOTORS FOR A SPACE SHUTTLE BOOSTER. VOLUME 1: EXECUTIVE SUMMARY.
Final Report.
15 Mar 72, 32p NASA-CR-124236, TWR-5672-VOL-1
Contract NAS8-28430

Descriptors: *Propulsion system configurations, *Rocket engine design, *Solid propellant rocket engines, *Space shuttle boosters, Cost effectiveness, Management planning, Manufacturing.

For abstract, see STAR 1120

N73-29821/8GA PC$23.00/MF$1.45
Thiokol Chemical Corp., Brigham City, Utah. Wasatch Div.
STUDY OF SOLID ROCKET MOTOR FOR SPACE SHUTTLE BOOSTER, VOLUME 3: PROGRAM ACQUISITION PLANNING.
Final Report.
15 Mar 72, 420p NASA-CR-124238, TWR-5672-VOL-3
Contract NAS8-28430

Descriptors: *Boosters, *Project management, *Rocket engine design, *Solid propellant rocket engines, *Space shuttles, Cost analysis, Manufacturing, Performance tests, Systems engineering.

For abstract, see STAR 1120

N73-29942/2GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
TANK FRAGMENTATION TEST.
C. J. Daye, D. Cooksey, R. J. Walters, and A. E. Auble. Aug 73, 18p NASA-TM-X-68282

Descriptors: *Fragmentation, *Simulation, *Tanks (Containers), Disks (Shapes), Ejection, Impingement, Spheres.

For abstract, see STAR 1120

21I. Rocket Propellants

AD-767 798/2GA Not available NTIS
Explosives Research and Development Establishment Waltham Abbey (England)
PERCHLORATE DEGRADATION OF ETHYL OLEATE IN SOLID PROPELLANTS,
Alfred G. Smeeth, Graham J. Spickernell, and John Warren. 1 Dec 72, 8p Rept no. ERDE-Offprint-29 DRIC-BR-36493
Revision of report dated 31 Jul 72.
Availability: Pub. in Industrial and Engineering Chemistry, Product Research and Development, v12 n1 p75-80 Mar 73.

Descriptors: (*Solid rocket propellants, *Age hardening), (*Surface-active substances, Oxidation), Ammonium perchlorate, Plastics, Spectra(Infrared), Oleic acids, Esters, Antioxidants, Great Britain.
Identifiers: *Oleates, Chemical reaction mechanisms, Extensibility, Wetting agents.

Plastic rocket propellant of the polyisobutene-ammonium perchlorate type undergoes a physical aging on long-term storage. Chemical, infrared, and chromatographic studies show that the oleate ester wetting agent used in propellant manufacture undergoes oxidation upon storage of the propellant. The addition of a few percent of antioxidant inhibits the oxidation of the oleate function, and propellant formulated with wetting agent treated with antioxidant ages to a lesser extent than that formulated with untreated wetting agent. (Modified author abstract)

AD-768 195/0GA PC$2.75/MF$1.45
Princeton Univ N J Dept of Aerospace and Mechanical Sciences
SOLID PROPELLANT COMBUSTION MECHANISM RESEARCH.
Annual rept. 1 Nov 72-30 Sep 73,
M. Summerfield, L. H. Gaveny, T. J. Ohlemiller, N. Kubota, and R. N. Battista. Aug 73, 15p
Contract N00014-67-A-0151-0023
See also AD-763 786.

Descriptors: (*Solid rocket propellants, *Combustion), Ignition, Burning rate, Nitrocellulose, Double base rocket propellants, Interior ballistics, Nozzle throats, Nozzle area ratio.

The annual report highlights the progress being made on several concurrent solid propellant combustion mechanism researches. Studies of nitrocellulose-base propellants have produced a broad range of experimental results for platonized and unplatonized propellants. The corresponding mathematical models consider the flame zone processes controlling temperature sensitivity, extinguishment limits, and burning rate. The analytical studies of ignition and burning of porous propellants are producing good agreement with data, new insights into the combustion processes, and establishing regimes where steady-state burning rates are achievable. The work of nonsteady burning has progressed to the point that rocket motor transients can be predicted and dynamic burning rates in a variable throat area, low L* motor can be measured; this work has progressed from the research phase to the development stage. Sub-micron pyrophoric aluminum is being investigated as a means of increasing propellant burning rate. (Author)

N73-29800/2GA PC$5.50/MF$1.45
Union Carbide Corp., Bound Brook, N.J.
HYDROCARBON POLYMERIC BINDER FOR ADVANCED SOLID PROPELLANT.
Final Report, 1 Aug. 1971 - 31 Jul. 1972.
J. E. Potts. 31 Aug 72, 67p NASA-CR-133615
Contracts NAS7-100, JPL-951210
Subm-Prepared for JPL.

Descriptors: *Hydrocarbons, *Polymerization, *Solid rocket binders, Chemical engineering, Chemical reactions, Hydrogenation, Molecular weight.

For abstract, see STAR 1120

22. SPACE TECHNOLOGY

22A. Astronautics

N73-29868/9GA PC$6.25/MF$1.45
National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
SHUTTLE SORTIE SIMULATION USING A LEAR JET AIRCRAFT: MISSION NO. 1 (ASSESS PROGRAM).
D. R. Mulholland, J. O. Reller, Jr., C. B. Nell, Jr., and R. H. Mason. Dec 72, 84p NASA-TM-X-62283

Descriptors: *Lear jet aircraft, *Space shuttle orbiters, *Spacelab, Aircraft specifications, Cv-990 aircraft, Data acquisition, Data processing , Data reduction.

For abstract, see STAR 1120

N73-29870/5GA PC$18.25/MF$1.45
Martin Co., Denver, Colo.
ASTRONOMY SORTIE MISSIONS DEFINITION STUDY. VOLUME 3, BOOK 1: DESIGN ANALYSIS AND TRADE STUDIES.
Final Report.
Sep 72, 324p NASA-CR-124047, AM-1002-1004-VOL-3-BK-1
Contract NAS8-28144
Seri-4. Subm-Prepared in Cooperation with Itek Corp., Lexington, Mass. And Bendix Corp., Denver.

Descriptors: *Mission planning, *Space missions, *Space shuttles, *Spaceborne astronomy, Operations research, Payloads, Spacecraft configurations, Systems analysis.

For abstract, see STAR 1120

N73-29871/3GA PC$21.25/MF$1.45
Martin Co., Denver, Colo.
ASTRONOMY SORTIE MISSIONS DEFINITION STUDY. VOLUME 3, BOOK 2: APPENDIX: DESIGN ANALYSIS AND TRADE STUDIES.
Final Report.
Sep 72, 383p NASA-CR-124044, AM-1002-1004-VOL-3-BK-2
Contract NAS8-28144
Seri-4. Subm-Prepared in Cooperation with Bendix Corp., Denver and Itek Corp., Lexington, Mass.

Descriptors: *Mission planning, *Payloads, *Space missions, *Space shuttles, *Spaceborne astronomy, Management planning, Project management, Spacecraft design, Spacecraft performance.

For abstract, see STAR 1120

N73-29872/1GA PC$6.50/MF$1.45
Martin Marietta Corp., Denver, Colo.
ASTRONOMY SORTIE MISSIONS DEFINITION STUDY. VOLUME 4: PROGRAM DEVELOPMENT REQUIREMENTS.
Final Report.
Sep 72, 86p NASA-CR-124046, AM-1002-1004-VOL-4
Contract NAS8-28144
Seri-4. Subm-Prepared in Cooperation with Bendix Corp., Denver and Itek Corp., Lexington, Mass.

Descriptors: *Cost estimates, *Mission planning, *Space missions, *Spaceborne astronomy, Equipment specifications, Management planning, Space shuttles, Systems engineering.

For abstract, see STAR 1120

N73-29984/4GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
THE 1973 NASA MISSION MODEL.
Apr 73, 19p NASA-TM-X-64739

Descriptors: *Mission planning, *Nasa programs, *Space flight, Manned spacecraft, Payloads, Space exploration, Space programs.

For abstract, see STAR 1120

22B. Spacecraft

AD-768 339/4GA PC$3.00/MF$1.45
Aerospace Corp El Segundo Calif Engineering Science Operations
PHOTOGRAPHIC MEASUREMENT OF PARTICULATE SURFACE CONTAMINATION.
Rept. for Oct 71-Oct 72,
O. Hamberg. 31 Jul 73, 50p Rept no. TR-0074(4901-01)-2 SAMSO-TR-73-308
Contract F04701-73-C-0074

Descriptors: (*Spacecraft components, Dust), Particle size, Contamination, Measurement, Photographic techniques, Surface properties.

The particulate surface cleanliness of spacecraft is important to the proper functioning of certain spacecraft devices. The report reviews the limitations of some surface contamination measurements currently used, and shows how an approach based on the use of macrophotography has some inherent advantages over the usual methods for field measurement of assembled spacecraft. These advantages are that no contact with sensitive surfaces is required, the measurement is direct, and a permanent record is provided. The results of an experiment which compares particle visibility and sizing using 4X macrophotography with 37X photomicrography are provided. These results, based on the use of available equipment, indicated that macrophotography with non-optimized equipment provided reasonable accuracy down to 16 microns and that further refinement might allow the measurement of smaller particle sizes. (Author)

COM-73-11517/2GA PC$4.50/MF$1.45
Wisconsin Univ., Madison. Space Science and Engineering Center.
FLAT PLATE RADIOMETER SUBSYSTEM FOR ITOS SPACECRAFT.
Final technical rept. Oct 67-Jun 72,
Robert J. Parent, Robert P. Wollersheim, and Robert M. Dombroski. May 72, 50p NOAA-73080203
Contract NOAA-E73-68(N)

Descriptors: (*Scientific satellites, *Radiometers) Design, Performance evaluation, Sensor characteristics, Schematic diagrams, Mechanical drawings, Calibrating.
Identifiers: ITOS Satellites.

The report presents a detailed description of the Flat Plate Radiometer Subsystem for the ITOS Spacecraft. The FPR was designed to measure the earth's heat balance from the vantage point of the ITOS earth-oriented platform. Details are given on sensors, electronics, the mechanical design, the thermal design, and sensor calibration. Performance results and data processing are summarized.

N73-29144/5GA PC$18.25/MF$1.45
Rockwell International Corp., Downey, Calif. Space Div.
S-2 STAGE 1/25 SCALE MODEL BASE REGION THERMAL ENVIRONMENT TEST. VOLUME 2: TEST DATA TABULATION, STATISTICAL ANALYSIS RESULTS, AND HEATING RATE CONTOURS.
J. A. Sadunas, E. P. French, and H. Sexton. 1 May 73, 325p NASA-CR-129010, SD73-SA-0061-VOL-2
Contract NAS7-200
Seri-2.

Descriptors: *Base heating, *Data processing, *Saturn s-2 stage, *Scale models, *Thermodynamic properties, Exhaust gases, Rocket exhaust, Systems analysis, Temperature measurement.

For abstract, see STAR 1120

N73-29366/4GA PC$5.00/MF$1.45
National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
GENERATION AND PHYSICAL CHARACTERISTICS OF THE ERTS MSS SYSTEM CORRECTED COMPUTER COMPATIBLE TAPES.
V. L. Thomas. Jul 73, 59p NASA-TM-X-70426, X-563-73-206

Descriptors: *Computer techniques, *Earth resources technology satellites, *Magnetic tapes, *Multispectral band scanners, Compatibility, Computer programming, Data transmission.

For abstract, see STAR 1120

N73-29875/4GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
APOLLO EXPERIENCE REPORT: THE DEVELOPMENT OF DESIGN-LOADS CRITERIA, METHODS, AND OPERATIONAL PROCEDURES FOR PRELAUNCH, LIFT-OFF, AND MIDBOOST CONDITIONS.
A. C. Mackey, and R. D. Schwartz. Aug 73, 18p NASA-TN-D-7373, JSC-S-342

Descriptors: *Apollo project, *Apollo spacecraft, *Prelaunch problems, *Spacecraft design, *Spacecraft launching, Spacecraft structures, Structural analysis, Structural design criteria.

For abstract, see STAR 1120

N73-29876/2GA PC$8.00/MF$1.45
General Dynamics/Convair, San Diego, Calif. Aerospace Div.
A METHOD FOR DETERMINING THE RESPONSE OF SPACE SHUTTLE TO ATMOSPHERIC TURBULENCE. VOLUME 1: SPACE SHUTTLE TURBULENCE RESPONSE.
1 Nov 71, 119p NASA-CR-124341, GDC-DDE71-002-VOL-1
Contract NAS8-26363

Descriptors: *Atmospheric turbulence, *Numerical analysis, *Space shuttles, Acceleration (Physics), Aerodynamic loads, Stability.

For abstract, see STAR 1120

N73-29878/8GA PC$4.00/MF$1.45
National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, Fla.
DELTA-95, RAE-B OPERATIONS SUMMARY.
25 May 73, 40p NASA-TM-X-69490, KSC-TR-1237

Descriptors: *Mission planning, *Radio astronomy explorer satellite, *Satellite design, *Satellite ground support, Ground support equipment, Satellite guidance, Satellite orbits.

For abstract, see STAR 1120

N73-29883/8GA PC$18.25/MF$1.45
Rockwell International Corp., Downey, Calif. Space Div.
S-2 STAGE 1/25 SCALE MODEL BASE REGION THERMAL ENVIRONMENT TEST. VOLUME 1: TEST RESULTS, COMPARISON WITH THEORY AND FLIGHT DATA.
J. A. Sadunas, E. P. French, and H. Sexton. 1 May 73, 325p NASA-CR-129009, SD73-SA-0061-VOL-1
Contract NAS7-200
Seri-2.

Descriptors: *Base heating, *Exhaust gases, *Rocket exhaust, *Saturn s-2 stage, *Scale models, Performance prediction, Temperature measurement, Thermodynamic properties.

For abstract, see STAR 1120

N73-29884/6GA PC$3.00/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena. Astrionics Div.
MARINER 9 DATA STORAGE SUBSYSTEM FLIGHT PERFORMANCE SUMMARY.
N. E. Thomas, and B. T. Larman. 1 Aug 73, 11p NASA-CR-133653, JPL-TM-33-638
Contract NAS7-100

Descriptors: *Data storage, *Data systems, *Flight characteristics, *Mariner 9 space probe, Abnormalities, Data recording, Playbacks.

For abstract, see STAR 1120

N73-29885/3GA PC$10.00/MF$1.45
Wyle Labs., Inc., Huntsville, Ala. Scientific Services and Systems Group.
PREDICTION OF SPACE SHUTTLE FLUCTUATING PRESSURE ENVIRONMENTS, INCLUDING ROCKET PLUME EFFECTS.
Final Report.
K. Plotkin, and J. E. Robertson. Jun 73, 156p NASA-CR-124347, WR-73-6
Contract NAS8-26919

Descriptors: *Acoustic properties, *Pressure, *Space shuttles, Earth atmosphere, Exhaust gases, Flow distribution, Transonic flight.

For abstract, see STAR 1120

N73-29886/1GA PC$15.75/MF$1.45
McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.
DETAILED TEST OBJECTIVES FOR THE EXTENDED LONG TANK DELTA LAUNCH VEHICLE, SPACECRAFT: AE-C.
Jul 73, 275p NASA-CR-133644, MDC-G4606
Contract NAS7-811L

Descriptors: *Delta launch vehicle, *Launch vehicle configurations, *Propulsion system configurations, Mission planning, Space missions, Systems engineering, Trajectory analysis.

For abstract, see STAR 1120

22C. Spacecraft Trajectories and Reentry

AD-768 355/0GA PC$6.50/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
POWER LUNAR RENDEZVOUS GUIDANCE.
Master's thesis,
Lawrence E. Baughn, Jr., and James Edward Leach. Jun 73, 86p Rept no. GGC/EE/73-2

Descriptors: (*Transfer trajectories, Rendezvous spacecraft), (*Rendezvous trajectories, Programming(Computers)), Mathematical models, Optimization, Terminal guidance, Theses, Lunar craft, Lunar trajectories.
Identifiers: Control theory, Riccati equation.

A computer program was developed to simulate the rendezvous of an ascending lunar shuttle on a biellptic transfer orbit with an earth shuttle on a free-return circumlunar trajectory. The effects of the gravitational perturbations due to the earth and sun on the transfer trajectory were corrected by an equation which predicted these perturbations. Finite burn periods were used for the transfers into the unguided coasting timing semi-ellipses. A previously proposed timing system was developed and refined. Two controllers were investigated for the terminal guidance portion of the rendezvous trajectory. A linearized suboptimal method was developed using a set of Riccati equations and was applied successfully. A 'reduced-memory' optimization scheme was also developed, but could not be successfully implemented. Since the optimal control was not achieved by the attempted method, results are presented only for the linearized scheme. (Author)

AD-768 356/8GA PC$3.50/MF$1.45
Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering
OPTIMAL TRUNCATED-POWER-SERIES APPROACH FOR DIFFERENT REENTRY PHASES.
Master's thesis,
Phillip C. Hollister. Jun 73, 86p Rept no. GGC/EE/73-6

Descriptors: (*Atmosphere entry, Adaptive control systems), (*Rendezvous spacecraft, *Space navigation), Manned spacecraft, Descent trajectories, Orbital trajectories, Power series, Aerodynamic heating, Mathematical models, Theses.
Identifiers: *Space shuttles, Open loop control systems, Control theory.

The optimal reentry problem is formulated for a phase by phase planar trajectory. The reentry portion of the trajectory for a shuttle type vehicle is divided into two phases and each phase is treated as an individual optimal control problem. Optimization is with respect to (1) peak heat rate for the entry phase, (2) a combination of total control energy, total heat absorbed, and satisfactory end conditions for the glide phase, and (3) a total surface distance. The control for each phase consists of a truncated power series as a function of the system states and the independent variable range. The entry phase ends at pullup and has a single constant for control. The glide phase ends at conditions desired for a transition from a high to a low angle of attack, the transition phase is left for a later study. By process of elimination the glide phase control form is reduced to a constant plus two terms. Searching for the coefficients which optimize the power series is accomplished using Davidon's minimization routine. Results indicated that a constant adaptive controller is a reasonable sub-optimal solution for both phases. (Modified author abstract)

N73-29882/0GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
APOLLO EXPERIENCE REPORT: EVOLUTION OF THE RENDEZVOUS-MANEUVER PLAN FOR THE LUNAR-LANDING MISSIONS.
J. D. Alexander, and R. W. Becker. Aug 73, 29p NASA-TN-D-7388, JSC-S-334

Descriptors: *Apollo project, *Lunar landing, *Lunar orbital rendezvous, *Rendezvous trajectories, *Space rendezvous, Ascent trajectories, Mission planning, Spacecraft performance, Trajectory analysis.

For abstract, see STAR 1120

N73-29962/0GA PC$3.00/MF$1.45
National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
COMPUTER SIMULATION OF TEMPERATURES ON THE CENTAUR STANDARD SHROUD DURING HEATED JETTISON TESTS.
J. A. Hemminger. 1973, 13p NASA-TM-X-68273, E-7556
Conf-Proposed for Presentation at 7TH Space Simulation Conf., Los Angeles, 12-14 Nov. 1973; Sponsored by Aiaa, NASA, AM. Soc. For Testing and Mater., Inst. Of Environ. Sci.

Descriptors: *Computerized simulation, *High temperature tests, *Jettison systems, Centaur project, Computer programs, Thermal simulation.

For abstract, see STAR 1120

N73-29963/8GA PC$5.50/MF$1.45
Von Karman Inst. for Fluid Dynamics, Rhode-Saint-Genese (Belgium).
CROSS-HATCHING: A COMPARISON BETWEEN THE BEHAVIOUR OF LIQUEFYING AND SUBLIMING ABLATION MATERIALS.
H. W. Stock, and M. Godard. Apr 73, 70p TN-85

Descriptors: *Ablation, *Boundary layer flow, *Flow distribution, *Heat transfer, *Supersonic speeds, Flow characteristics, Flow equations, Numerical analysis, Turbulent flow.

For abstract, see STAR 1120

22D. Spacecraft Launch Vehicles and Ground Support

N73-29867/1GA PC$12.50/MF$1.45
Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
THE DEEP SPACE NETWORK, VOLUME 16.
Progress Report, May - Jun. 1973.
15 Aug 73, 210p 0NASA-CR-133651, 0JPL-TR-32-1526-VOL-16
Contract 0NAS7-1000

Descriptors: *Deep space network, *Space exploration, Data processing, Deep space instrumentation facility, Ground based control, Ground support systems, Satellite tracking, Space communication, Space navigation.

For abstract, see STAR 1120

REPORT LOCATOR LIST

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21E AD-767 980/6GA
11F AD-767 981/4GA
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21B AD-767 995/4GA
20D AD-767 996/2GA
11F AD-767 997/0GA
14B AD-767 998/8GA
11F AD-767 999/6GA
14B AD-768 000/2GA
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20I AD-768 002/8GA
04A AD-768 003/6GA
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20N AD-768 007/7GA
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20I AD-768 062/2GA
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15C AD-768 065/5GA
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16D AD-768 353/5GA
17G AD-768 354/3GA
22C AD-768 355/0GA
22C AD-768 356/8GA
13I AD-768 357/6GA
04A AD-768 358/4GA
14D AD-867-379/GA
18D AE-472/GA

10B	AEC-tr-7420/GA	06A	BNL-17850/GA	05K	COM-71-80020-05/GA	17B	COM-73-11590/9GA
18G	AEC-tr-7433/GA	20H	BNL-17857/GA	05K	COM-71-80020-06/GA	17B	COM-73-11591/7GA
18G	AEC-tr-7434/GA	20H	BNL-17858/GA	05K	COM-71-80020-07/GA	17B	COM-73-11592/5GA
09B	AECD/COM-1/GA	20H	BNL-17861/GA	05K	COM-71-80020-08/GA	06C	COM-73-11593/3GA
20H	AECD/TP-31/GA	20H	BNL-17866/GA	05K	COM-71-80020-09/GA	02D	COM-73-11594/1GA
20H	AECD/TP-32/GA	18D	BNL-17873/GA	05K	COM-71-80020-10/GA	08J	COM-73-11595/8GA
18I	AECL-4427/GA	18H	BNL-17874/GA	05K	COM-71-80020-12/GA	04A	COM-73-11597/4GA
09E	AEEW-M-1119/GA	18A	BNL-17875/GA	05K	COM-71-80020-13/GA	06C	COM-73-11598/2GA
18J	AEEW-R-574/GA	06E	BNL-17883/GA	05K	COM-71-80020-14/GA	06C	COM-73-11599/0GA
18K	AEEW-R-791/GA	20G	BNL-17892/GA	05K	COM-71-80020-15/GA	06C	COM-73-11600/6GA
20M	AEEW-R-807/GA	20G	BNL-17893/GA	05K	COM-71-80020-16/GA	06C	COM-73-11601/4GA
18K	AEEW-R-816/GA	20G	BNL-17896/GA	09B	COM-73-11319/3GA	05C	COM-73-11602/2GA
18K	AEEW-R-817/GA	18E	BNL-17897/GA	05B	COM-73-11472/0GA	06C	COM-73-11603/0GA
18J	AEEW-R-832/GA	20G	BNL-17906/GA	05B	COM-73-11473/8GA	06C	COM-73-11604/8GA
18K	AEEW-R-839/GA	18J	BNL-17908/GA	05B	COM-73-11474/6GA	06C	COM-73-11605/5GA
18I	AEEW-R-846/GA	20G	BNL-17919/GA	05B	COM-73-11475/3GA	06C	COM-73-11606/3GA
18K	AEEW-R-847/GA	13B	BNL-50355/GA	05B	COM-73-11476/1GA	04B	COM-73-11607/1GA
18K	AEEW-R-858/GA	18I	BNWL-CC-2131/GA	05B	COM-73-11477/9GA	06C	COM-73-11608/9GA
11F	AERE-R-7172/GA	18G	BNWL-CC-649/GA	05B	COM-73-11478/7GA	05C	COM-73-11609/7GA
11D	AERE-R-7296/GA	18H	BNWL-CC-995/GA	05B	COM-73-11479/5GA	06C	COM-73-11610/5GA
06A	AERE-R-7321/GA	06R	BNWL-SA-4511/GA	05B	COM-73-11480/3GA	06C	COM-73-11611/3GA
18J	AERE-R-7407/GA	07A	BNWL-SA-4525/GA	05B	COM-73-11481/1GA	06C	COM-73-11612/1GA
18J	AERE-R-7408/GA	06R	BNWL-SA-4533/GA	05B	COM-73-11482/9GA	13B	COM-73-11613/9GA
20H	AERE-R-7425/GA	18H	BNWL-SA-4534/GA	05B	COM-73-11483/7GA	06C	COM-73-11614/7GA
18K	AI-AEC-13059/GA	06R	BNWL-SA-4545/GA	05B	COM-73-11484/5GA	06M	COM-73-11615/4GA
18I	AI-AEC-13060/GA	18D	BNWL-SA-4591/GA	05B	COM-73-11485/2GA	04B	COM-73-11616/2GA
18J	AI-AEC-13065/GA	06F	BNWL-SA-4613/GA	05B	COM-73-11486/0GA	18C	COM-73-11617/0GA
18N	AI-AEC-13073/GA	18D	BNWL-SA-4616/GA	05B	COM-73-11487/8GA	06T	COM-73-11618/8GA
18N	AI-AEC-13076(Vol.1)/GA	13B	BNWL-SA-4666/GA	05B	COM-73-11488/6GA	06M	COM-73-11619/6GA
18K	AI-AEC-13076(Vol.3)/GA	06R	BNWL-SA-4680/GA	05B	COM-73-11489/4GA	06C	COM-73-11620/4GA
18N	AI-AEC-13076(Vol.4)/GA	06F	BNWL-SA-4704/GA	17B	COM-73-11493/6GA	04A	COM-73-11622/0GA
18N	AI-AEC-13076(Vol.5)/GA	20H	BNWL-SA-4708/GA	18C	COM-73-11498/5GA	08H	COM-73-11623/8GA
18I	AI-AEC-13080/GA	06F	BNWL-SA-4709/GA	20D	COM-73-11502/4GA	06C	COM-73-11624/6GA
18N	AI-AEC-13081/GA	06R	BNWL-SA-4710/GA	08H	COM-73-11503/2GA	04B	COM-73-11625/3GA
18N	AI-AEC-13085/GA	06F	BNWL-SA-4712/GA	08J	COM-73-11504/0GA	09E	COM-73-11626/1GA
18N	AI-AEC-13086/GA	06R	BNWL-1183-14/GA	06T	COM-73-11508/1GA	06C	COM-73-11627/9GA
18N	AI-AEC-13088/GA	04B	BNWL-1651(Pt.1)/GA	04B	COM-73-11510/7GA	02D	COM-73-11628/7GA
18N	AI-AEC-13092/GA	18B	BNWL-1686/GA	04A	COM-73-11514/9GA	06F	COM-73-11630/3GA
18N	AI-AEC-13095/GA	06R	BNWL-1697/GA	06C	COM-73-11515/6GA	06C	COM-73-11631/1GA
18N	AI-AEC-13098/GA	18H	BNWL-1727(Add.)/GA	06C	COM-73-11516/4GA	08J	COM-73-11633/7GA
10B	AI-AEC-13099/GA	18I	BNWL-1736/GA	22B	COM-73-11517/2GA	04A	COM-73-11635/2GA
11F	ANCR-1097/GA	18H	BNWL-1737/GA	20F	COM-73-11518/0GA	05I	COM-73-11638/6GA
09B	ANCR-1116/GA	08H	BNWL-1739/GA	13J	COM-73-11519/8GA	05D	COM-73-11639/4GA
18D	ANL/HEP-7314/GA	18G	BNWL-1741/GA	06C	COM-73-11521/4GA	06C	COM-73-11641/0GA
20H	ANL/HEP-7318/GA	06F	BNWL-1747/GA	20I	COM-73-11522/2GA	04B	COM-73-11643/6GA
20H	ANL/HEP-7320/GA	18C	BNWL-1748/GA	04B	COM-73-11523/0GA	07B	COM-73-11644/4GA
18J	ANL-Trans-942/GA	06C	BNWL-1750(Pt.2)/GA	04B	COM-73-11525/5GA	03B	COM-73-11647/7GA
18H	ANL-Trans-943/GA	18D	CALT-767-P-11-X-5/GA	08G	COM-73-11528/9GA	08J	COM-73-11648/5GA
12A	ANL-7838/GA	20I	CALT-767-P-2-X-2/GA	06C	COM-73-11531/3GA	06C	COM-73-11649/3GA
06R	ANL-7970/GA	18H	CEA-CONF-2016/GA	13J	COM-73-11532/1GA	06C	COM-73-11650/1GA
18J	ANL-7985/GA	07B	CEA-CONF-2171/GA	08E	COM-73-11534/7GA	06C	COM-73-11652/7GA
09B	ANL-7988/GA	18F	CEA-CONF-2190/GA	05I	COM-73-11535/4GA	06C	COM-73-11653/5GA
10C	ANL-7998/GA	13H	CEA-CONF-2192/GA	06C	COM-73-11536/2GA	20D	COM-73-11654/3GA
18B	ARH-SA-149/GA	11F	CEA-CONF-2203/GA	06F	COM-73-11538/8GA	06C	COM-73-11655/0GA
18J	ARH-SA-156/GA	11F	CEA-CONF-2209/GA	06C	COM-73-11544/6GA	17B	COM-73-11656/8GA
18G	ARH-SA-162/GA	14B	CEA-CONF-2211/GA	06C	COM-73-11545/3GA	05I	COM-73-11657/6GA
04B	ARLV-351-28/GA	11F	CEA-CONF-2236/GA	08J	COM-73-11546/1GA	09A	COM-73-11659/2GA
20G	AWRE-O-18/73/GA	09A	CEA-CONF-2240/GA	04A	COM-73-11547/9GA	07D	COM-73-11660/0GA
11F	AWRE-O-22/73/GA	20L	CEA-CONF-2241/GA	04A	COM-73-11548/7GA	05I	COM-73-11662/6GA
09A	BARC-626/GA	20L	CEA-CONF-2242/GA	08J	COM-73-11552/9GA	04B	COM-73-11663/4GA
18J	BARC-643/GA	09A	CEA-CONF-2244/GA	08J	COM-73-11553/7GA	06C	COM-73-11664/2GA
13I	BARC-645/GA	20L	CEA-CONF-2246/GA	04A	COM-73-11554/5GA	05I	COM-73-11671/7GA
11B	BARC-646/GA	18I	CEA-N-1570/GA	06C	COM-73-11555/2GA	13B	COM-73-11672/5GA
07D	BARC-647/GA	18D	CEA-N-1578/GA	06C	COM-73-11556/0GA	13B	COM-73-11673/3GA
07D	BARC-648/GA	18K	CEA-N-1579/GA	04A	COM-73-11558/6GA	20D	COM-73-11674/1GA
18D	BARC-650/GA	20H	CEA-N-1582/GA	06C	COM-73-11559/4GA	08J	COM-73-11676/6GA
11F	BARC-654/GA	18I	CEA-N-1613/GA	04A	COM-73-11560/2GA	13B	COM-73-11677/4GA
18J	BARC-656/GA	06R	CEA-R-4009(1)(2nd.Ed.)/GA	04A	COM-73-11561/0GA	10B	COM-73-11692/3GA
18J	BARC-657/GA	09B	CEA-R-4397/GA	04A	COM-73-11562/8GA	13B	COM-73-11694/9GA
20J	BARC-658/GA	20L	CEA-R-4401/GA	04A	COM-73-11563/6GA	13B	COM-73-11695/6GA
18J	BARC-662/GA	18D	CEA-R-4403/GA	04B	COM-73-11564/4GA	13B	COM-73-11707/9GA
11I	BDX-613-821(Rev.)/GA	20I	CEA-R-4410/GA	06H	COM-73-11565/1GA	13B	COM-73-11708/7GA
11D	BDX-613-827/GA	06R	CEA-R-4416/GA	13B	COM-73-11567/7GA	13B	COM-73-11711/1GA
13H	BDX-613-860/GA	20I	CEA-R-4430/GA	06C	COM-73-11568/5GA	13B	COM-73-11712/9GA
04B	BDX-613-921/GA	06R	CEA-R-4431/GA	05A	COM-73-11569/3GA	20E	COM-73-11713/7GA
18J	BLG-473/GA	20L	CEA-R-4453/GA	05A	COM-73-11570/1GA	06D	COM-73-11714/5GA
18I	BMFT-FBK-73-4/GA	20G	CERN-73-6/GA	06C	COM-73-11571/9GA	05C	COM-73-11715/2GA
18J	BMFT-FBK-73-5/GA	20H	CNRS-CPT-72-P-495/GA	06R	COM-73-11572/7GA	20E	COM-73-11719/4GA
18D	BMFT-FBK-73-9/GA	20J	CNRS-CPT-72-P-499/GA	04B	COM-73-11573/5GA	06R	COM-73-11720/2GA
11F	BMI-X-10260/GA	05K	COM-71-80003-A53/GA	07C	COM-73-11574/3GA	04B	COM-73-11727/7GA
11F	BMI-X-10286/GA	05K	COM-71-80011-023/GA	04A	COM-73-11575/0GA	05C	COM-73-50115-09/GA
06F	BMI-171-149/GA	05K	COM-71-80013-D04/GA	04B	COM-73-11576/8GA	05C	COM-73-50182-41/GA
08H	BMI-171-151/GA	05K	COM-71-80013-D07/GA	13J	COM-73-11577/6GA	05C	COM-73-50185-095/GA
11D	BNL-17555/GA	05K	COM-71-80013-D20/GA	20E	COM-73-11579/2GA	05C	COM-73-50185-099/GA
04B	BNL-17750/GA	05K	COM-71-80013-D29/GA	08N	COM-73-11581/8GA	05C	COM-73-50185-100/GA
21D	BNL-17800/GA	05K	COM-71-80013-D46/GA	13B	COM-73-11582/6GA	05C	COM-73-50185-101/GA
20G	BNL-17813/GA	05K	COM-71-80019-01/GA	06E	COM-73-11583/4GA	05C	COM-73-50185-102/GA
20G	BNL-17815/GA	05K	COM-71-80019-03/GA	06E	COM-73-11584/2GA	05C	COM-73-50185-103/GA
06O	BNL-17819/GA	05K	COM-71-80020-01/GA	08H	COM-73-11585/9GA	05C	COM-73-50185-104/GA
06O	BNL-17828/GA	05K	COM-71-80020-02/GA	17B	COM-73-11587/5GA	05C	COM-73-50185-105/GA
20H	BNL-17846/GA	05K	COM-71-80020-03/GA	17B	COM-73-11588/3GA	05C	COM-73-50185-106/GA
06O	BNL-17849/GA	05K	COM-71-80020-04/GA	17B	COM-73-11589/1GA	05C	COM-73-50185-107/GA

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18J EURFNR-1089/GA
18J EURFNR-1091/GA
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08G E73-11049/GA
08L E73-11050/GA
02F E73-11052/GA
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08B E73-11061/GA
04B E73-11062/GA
08B E73-11065/GA
08F E73-11066/GA
08H E73-11082/GA
02C E73-11091/GA
02F E73-11092/GA
02F E73-11093/GA
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20H FRNC-TH-277/GA
20I FRNC-TH-284/GA
20I FRNC-TH-292/GA
20H FRNC-TH-304/GA

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20H FRNC-TH-332/GA
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20I FRNC-TH-373/GA
18K FRNC-TH-381/GA
07A GAT-P-58/Thesis/GA
18J GEAP-10028-45/GA
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18J GEAP-10542/GA
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18K GEAP-13771-5/GA
18K GEAP-13771-6/GA
18J GEAP-13823-1/GA
18J GEAP-13823-4/GA
18I GEAP-13825-4/GA
18I GEAP-13825-5/GA
18I GEAP-13921/GA
18G GEPP-104/GA
18J GERHTR-44/GA
18J GERHTR-72/GA
18J GERHTR-83/GA
18G GERHTR-84/GA
18J GERHTR-85/GA
18J GU-5297/GA
10B GULF-GA-A-11090/GA
18J GULF-GA-A-12530/GA
18I GULF-GA-A-9354/GA
18J GULF-GA-B-12409/GA
18H HASL-274/GA
18H HASL-274(App.)/GA
04A HASL-275/GA
11F HEDL-SA-225/GA
18J HEDL-SA-297/GA
18J HEDL-SA-546/GA
11F HEDL-TM-72-105/GA
11F HEDL-TME-72-64/GA
18H HEDL-TME-73-36/GA
09B HMI-B-132/GA
18J HW-53455/GA
18J ICP-1016/GA
18J ICP-1022/GA
18J ICP-1024/GA
20H IEA-22/GA
11F IEA-268/GA
07D IEA-278/GA
20L IFA-LR-1-1972/GA
06R IFA-PN-26-1972/GA
07B IJS-R-609/GA
07B IJS-R-610/GA
07B IJS-R-611/GA
07B IJS-R-612/GA
07B IJS-R-613/GA
07B IJS-R-614/GA
07B IJS-R-615/GA
20H INDC-11-U/GA
20G INS-J-141/GA
18D INS-TH-78/GA
20H INS-583/GA
20L INT-26(Pt.1)/GA
18D IPNO/HE-73-1/GA
20H IPNO-TH-73-3/GA
20H IPNO-TH-73-4/GA
20H IPNO-71-9/GA
18A IPP-III-6/GA
18A IPP-III-7/GA
20I IPP-IV-49/GA
18A IPP-IV-50/GA
20I IPP-2/208/GA
20I IPP-2/209/GA
20L IPP-4/104/GA
20E IPP-4/106/GA
18A IPP-4/107/GA
18A IPP-4/108/GA
20I IPP-6/117/GA
14B IPPJ-DT-28/GA
20I IPPJ-DT-30/GA
20I IPPJ-137/GA
20H IPPJ-138/GA
20I IPPJ-139/GA
20I IPPJ-140/GA
20I IPPJ-141/GA
18D IRI-132-73-2/GA
11F IS-T-580/GA
07A IS-T-595/GA
09B IS-3041/GA
09B IS-3042/GA
20H ITEF-950/GA
20L ITF-72-186-P/GA
20L ITF-73-22-P/GA
20I ITF-73-8-E/GA
18D ITJ-27/GA
18D ITJ-37/GA
20I JAERI-M-4961/GA
18D JAERI-M-4964/GA
20H JAERI-M-4968/GA
18K JAERI-M-4971/GA
18D JAERI-M-5000/GA
18J JAERI-M-5015/GA
06R JAERI-M-5018/GA
20I JAERI-M-5021/GA
18A JAERI-M-5029/GA
20G JAERI-M-5032/GA
20I JAERI-M-5035/GA
07A JAERI-M-5057/GA
18I JAERI-M-5064/GA
18D JAERI-M-5067/GA
07E JAERI-M-5071/GA
18I JAERI-M-5083/GA
11F JAERI-M-5094/GA
07B JAERI-1225/GA
07E JAERI-5028/GA
11F JAPFNR-103/GA
12A JEN-254/GA
20H JEN-257/GA
20H JEN-259/GA
20H JINR-D2-7110/GA
20H JINR-D2-7180/GA
18D JINR-E1-6976/GA
20H JINR-E1-7024/GA
20H JINR-E11-6969/GA
07D JINR-E12-6778/GA
20L JINR-E14-7012/GA
20H JINR-E2-6962/GA
20H JINR-E2-6978/GA
20H JINR-E2-6982/GA
20H JINR-E2-7028/GA
20L JINR-E2-7038/GA
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20J JINR-E2-7045/GA
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20H JINR-E2-7051/GA
20H JINR-E2-7122/GA
20L JINR-E4-7030/GA
20H JINR-E4-7054/GA
20H JINR-E4-7069/GA
20L JINR-E4-7150/GA
20H JINR-E7-6970/GA
20H JINR-P1-6993/GA
20H JINR-P1-7004/GA
20H JINR-P1-7033/GA
20H JINR-P1-7057/GA
20H JINR-P1-7062/GA
20H JINR-P1-7063/GA
20H JINR-P1-7103/GA
20H JINR-P1-7115/GA
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20H JINR-P2-6867/GA
20H JINR-P2-7032/GA
20H JINR-P2-7037/GA
20J JINR-P2-7052/GA
20J JINR-P2-7068/GA
20H JINR-P2-7086/GA
20H JINR-P2-7089/GA
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20H JINR-P4-6991/GA
20L JINR-P4-7001/GA
20H JINR-P4-7055/GA
20L JINR-P4-7097/GA
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20H JINR-P4-7144/GA
20L JINR-P4-7152/GA
20H JINR-P6-7003/GA
20H JINR-P6-7007/GA
20H JINR-P7-7022/GA
20G JINR-P7-7092/GA
20H JINR-P7-7108/GA
20H JINR-P7-7165/GA
20H JINR-P7-7168/GA
11I JINR-P8-6987/GA
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20M JINR-P8-7009/GA
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20G JINR-P9-7066/GA
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05J JPRS-60091/GA
08N JPRS-60100/GA
06D JPRS-60103/GA
01C JPRS-60104/GA
01B JPRS-60114/GA
15G JPRS-60145/GA
03B JPRS-60153/GA
20B JUL-862-AC/GA
20E JUL-905-FF/GA
18I JUL-906-RX/GA
09B JUL-908-MA/GA
18D JUL-914-DE/GA
18K JUL-928-RG/GA
18E JUL-929-HT-WT/GA
18A JUL-931-RG/GA
07D JUL-934-RW/GA
09B K-GD-808/GA
06R K-L-6316/GA
07D K-1843/GA
20K KAPL-P-3955/GA
09B KFK-EXT-13/72-3/GA
09B KFK-EXT-8/72-4/GA
09B KFK-EXT-8/72-6/GA
09B KFK-EXT-8/72-7/GA
09B KFK-PDV-1/GA
20H KFK-1518/GA
11B KFK-1753/GA
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20M KFK-1786/GA
18G KFK-1789/GA
07D KFKI-72-72/GA
07D KFKI-72-73/GA
12A KFKI-73-6/GA
20I KHFTI-72-24/GA
20H KR-148/GA
20G LA-UR-73-413/GA
20H LA-UR-73-489/GA
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18D LA-UR-73-601/GA
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18B LA-UR-73-641/GA
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07C LA-UR-73-690/GA
07D LA-UR-73-694/GA
07C LA-UR-73-695/GA
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18C LA-UR-73-713/GA
18C LA-UR-73-721/GA
04A LA-UR-73-732/GA
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18J LA-UR-73-764/GA
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06J LA-UR-73-832/GA
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10B LA-UR-73-849/GA
20G LA-UR-73-855/GA
09B LA-UR-73-890/GA
06E LA-UR-73-899/GA
20G LA-5013-T/GA
14B LA-5119/GA
08G LA-5129/GA
20I LA-5132-MS/GA
11D LA-5147/GA
11F LA-5169/GA
11D LA-5173/GA
06R LA-5180-C/GA
07E LA-5186/GA
21C LA-5199-MS/GA
08I LA-5207-MS/GA
08I LA-5210-MS/GA
20H LA-5221/GA
11B LA-5223-PR/GA
20K LA-5225-MS/GA
07D LA-5228/GA
20H LA-5230-T/GA
21H LA-5231-MS/GA
20H LA-5241-MS/GA
20E LA-5243-MS/GA
05A LA-5248/GA
12A LA-5254-MS/GA
20G LA-5262-PR/GA
20I LA-5269-MS/GA
20H LA-5277-MS/GA
19D LA-5278-MS/GA
18G LA-5281-MS/GA
06F LA-5282-MS/GA
18J LA-5284-PR/GA
21F LA-5285-MS/GA
18G LA-5286-MS/GA
10B LA-5289-MS/GA
18B LA-tr-73-12/GA
07D LA-tr-73-4/GA
18D LAL-1265/GA
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07D LBL-1159/GA
20L LBL-1168/GA
07D LBL-1199/GA
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20G LBL-1389/GA
20G LBL-1398/GA
18D LBL-1503/GA
18A LBL-1589/GA
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07E LBL-1687/GA
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18D LBL-1750/GA
20H LBL-1777/GA
18A LBL-1782/GA
18D LBL-1791/GA
20H LBL-1798/GA
06R LBL-1799/GA
07D LBL-1900/GA
06E LBL-2001/GA
07D LBL-2011/GA
18D LBL-2027/GA
06E LF-tr-60/GA
06R LF-tr-76/GA
06R LF-tr-77/GA
18D LFEN-NL-74/GA
20H LFEN-RI-5/GA
18G LFEN-RI-6/GA
18G LFEN-RI-7/GA
11F LFEN-144-a/GA
18K LFEN-145-a/GA
20I LS-255/GA
20H LYCEN-7261/GA
20G LYCEN-7266/GA
20H LYCEN-7268/GA
09A LYCEN-7276/GA
18D LYCEN-7282/GA
18A MATT-Q-27/GA
18A MATT-Trans-110/GA
18A MATT-Trans-111/GA
10B MLM-1972/GA
07D MLM-2006/GA
11F MLM-2037/GA
07E MLM-2042/GA
18I MRR-100/GA
18K MRR-114/GA
10B N-70-42732/GA
04A N-71-12774/GA
06K N-72-18136/GA
10B N-72-22043/GA
13K N-72-24686/GA
18H N-72-24728/GA
18D N-72-25743/GA
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18D N-72-29469/GA
20H N-72-29705/GA

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20H N-72-32679/GA
18F N-72-33651/GA
07D N-73-10685/GA
21F N-73-12692/GA
18N N-73-12694/GA
18N N-73-12697/GA
07D N-73-12763/GA
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03B N-73-15837/GA
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20H N-73-16665/GA
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20I N-73-16693/GA
03B N-73-16793/GA
03B N-73-16797/GA
03B N-73-16814/GA
04A N-73-16832/GA
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11F NAA-SR-Memo-10914/GA
18N NAA-SR-Memo-6924/GA
18N NAA-SR-Memo-7376/GA
18N NAA-SR-Memo-8215(Pt.4)/GA
18J NAA-SR-Memo-8348/GA
18J NAA-SR-Memo-8405/GA
18N NAA-SR-Memo-8679/GA
18N NAA-SR-10022(Add.1)(Rev.)/GA
18N NAA-SR-10022(Rev.)/GA
18N NAA-SR-10027/GA
18N NAA-SR-10174/GA
18N NAA-SR-10245/GA
11F NAA-SR-10277/GA
18N NAA-SR-10490/GA
18N NAA-SR-10500/GA
18N NAA-SR-10515/GA
18N NAA-SR-10516/GA
18J NAA-SR-10851/GA
18N NAA-SR-10859/GA
18N NAA-SR-10903/GA
11F NAA-SR-10965/GA
18N NAA-SR-11092/GA
18N NAA-SR-11096/GA
18N NAA-SR-11164/GA
18N NAA-SR-11206(Add.)/GA
18N NAA-SR-11304/GA
18N NAA-SR-11316/GA
18N NAA-SR-11457/GA
18N NAA-SR-11490/GA
18N NAA-SR-11496/GA
18N NAA-SR-11547/GA
18N NAA-SR-11584/GA
18N NAA-SR-11637/GA
18N NAA-SR-11685(Vol.2)/GA
18N NAA-SR-11691(Vol.1)/GA
18N NAA-SR-11691(Vol.2)/GA
18N NAA-SR-11755(Vol.2)/GA
18N NAA-SR-11758/GA
18N NAA-SR-11759/GA
10B NAA-SR-11760(Vol.1)/GA
18N NAA-SR-11760(Vol.2)/GA
18N NAA-SR-11886(Vol.1)/GA
18N NAA-SR-11886(Vol.2)/GA
18N NAA-SR-11898/GA
18N NAA-SR-11911/GA
11F NAA-SR-11951/GA
18N NAA-SR-11955/GA
18N NAA-SR-11956/GA
18N NAA-SR-11960/GA
18N NAA-SR-11962/GA
18N NAA-SR-11964/GA
10B NAA-SR-12016(Vol.1)/GA
10B NAA-SR-12016(Vol.2)/GA
18N NAA-SR-12020/GA
11F NAA-SR-12025/GA
18N NAA-SR-12027/GA
18N NAA-SR-12029/GA
18N NAA-SR-12033/GA
18N NAA-SR-12284/GA
18N NAA-SR-12374/GA
18N NAA-SR-12378/GA
18N NAA-SR-12607/GA
18N NAA-SR-5413/GA
18N NAA-SR-6022/GA
18N NAA-SR-6207/GA
18N NAA-SR-6293/GA
18N NAA-SR-6294/GA
18N NAA-SR-6320(Vol.1)/GA
18N NAA-SR-6320(Vol.2)/GA
18N NAA-SR-6561/GA
18N NAA-SR-6691/GA
18N NAA-SR-6692/GA
18N NAA-SR-6693/GA
18N NAA-SR-6694/GA
11F NAA-SR-6732/GA
18N NAA-SR-6735(Add.1)/GA
18N NAA-SR-6791/GA
18N NAA-SR-6792/GA
18N NAA-SR-6794/GA
18N NAA-SR-6958/GA
18N NAA-SR-6991/GA
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18N NAA-SR-6993/GA
18N NAA-SR-6994/GA
18N NAA-SR-6996/GA
18N NAA-SR-7021/GA
18N NAA-SR-7048/GA
18N NAA-SR-7064/GA
18N NAA-SR-7192/GA
18N NAA-SR-7194/GA
18N NAA-SR-7195/GA
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18N NAA-SR-7529/GA
18N NAA-SR-7791/GA
18N NAA-SR-8295/GA
18N NAA-SR-8392/GA
18N NAA-SR-8430/GA
18N NAA-SR-8589/GA
18N NAA-SR-8613/GA
11F NAA-SR-8617(Vol.1)(Add.1)/GA
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18N NAA-SR-9392/GA
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18N NAA-SR-9486/GA
18N NAA-SR-9496/GA
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18N NAA-SR-9592/GA
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18N NAA-SR-9615/GA
18N NAA-SR-9618/GA
18J NAA-SR-9633/GA
18N NAA-SR-9642/GA
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18N NAA-SR-9992/GA
18N NAA-SR-9993/GA
18N NAA-SR-9996/GA
18H NERC-LV-539-23/GA
18H NIRS-RSD-34/GA
18H NIRS-RSD-36/GA
18H NIRS-RSD-37/GA
20H NP-19670/GA
18E NP-19703/GA
18I NP-19746/GA
18H NP-19751/GA
18H NP-19753/GA
18E NP-19755/GA
18I NP-19763/GA
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18A NP-19785/GA
18D NP-19789/GA
11F NRL-7565/GA
18C NVO-103(Rev.3)/GA
18C NVO-1163-237/GA
18C NVO-1163-238/GA
18C NVO-127/GA
18C NVO-71/GA
18C NVO-86(Rev.3)/GA
06F NYO-3995-22/GA
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01 N73-28977/9GA
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02 N73-28981/1GA
02 N73-28982/9GA
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02 N73-28989/4GA
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06P N73-29043/9GA
06E N73-29044/7GA
06E N73-29045/4GA
06C N73-29046/2GA
06S N73-29048/8GA
06M N73-29049/6GA
06G N73-29053/8GA
06K N73-29054/6GA
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06S N73-29056/1GA
06F N73-29057/9GA
06M N73-29059/5GA
05H N73-29060/3GA
07D N73-29075/1GA
14C N73-29090/0GA
17B N73-29091/8GA
17B N73-29098/3GA
17B N73-29099/1GA
17B N73-29100/7GA
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09E N73-29102/3GA
17B N73-29103/1GA
17B N73-29104/9GA
09B N73-29111/4GA
09B N73-29112/2GA
09B N73-29113/0GA
09B N73-29114/8GA
09A N73-29125/4GA
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17B N73-29127/0GA
09E N73-29128/8GA
09E N73-29129/6GA
09A N73-29130/4GA
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